THE OIL WEEKLY

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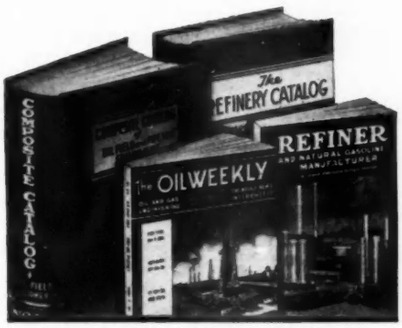

SPECIALIZED OIL JOURNALS

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The Oil Man's Calendar

FEB. 26–27	American Petroleum Institute, Dallas, Texas.
28	North Texas Oil and Gas Association, Wichita Falls, Texas.
MAR. 5	American Petroleum Institute, Illinois Chapter, Evansville, Indiana.
10	American Petroleum Institute, Los Angeles.
23–25	American Society of Mechanical Engineers, Houston, Texas.
26–27	American Petroleum Institute, Mid-Continent District, Tulsa.
APRIL 9–10	American Petroleum Institute, Eastern District, Pittsburgh.
16–17	National Petroleum Association, Cleveland, Ohio.
21–23	Southwestern Gas Measurement Short Course, Norman, Okla.
21–24	American Association of Petroleum Geologists, Denver, Colorado.
22–24	Petroleum Industry Electrical Association, Shreveport, La.
MAY 13–15	Natural Gasoline Association, Mayo Hotel, Tulsa.
NOV. 9–13	American Petroleum Institute, Chicago.

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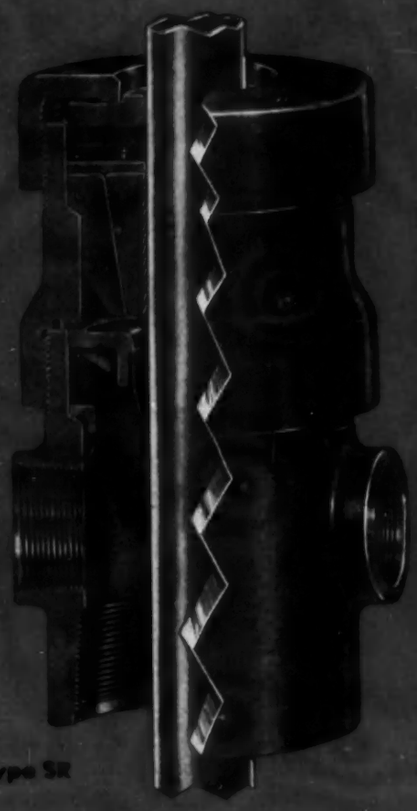

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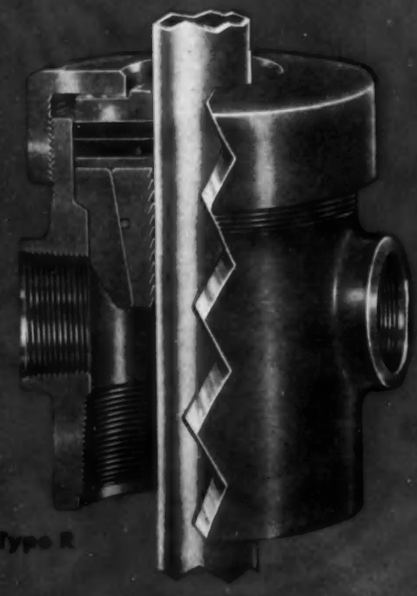

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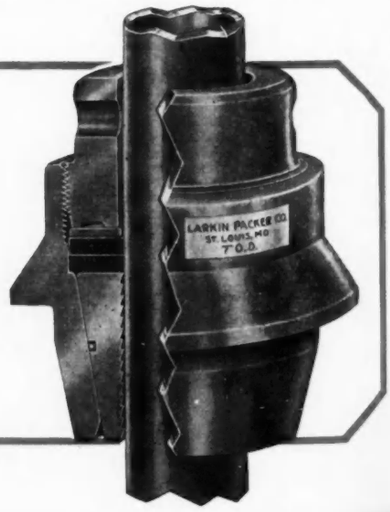


The Changing Panorama

Horse Sense Required in This Situation

SOME practical thinking and action should be indulged in by OPC and WPB with reference to California. It is silly to think that California operations can be carried on under the terms of M-68, designed to slow down drilling.

It is sensible to realize that upon California will fall the brunt of fueling the Army, the Navy and the Air Force, of ourselves and our Allies in the Far Eastern war zone. East Indies production can no longer help.

We are faced with a practical question which does not involve new discoveries, rate of recovery, or what have you. It involves keeping a supply of oil moving. We *can* move oil across the United States to California, it is true, but we are using those railroads for something else, fully as necessary as oil right now.

To those who would say that California does not have the locations for a stiff drilling campaign we will say that she does have locations if they do not have to be drilled upon M-68 specifications. Incidentally, California discovered ten new oil fields and found five deeper sands last year.

We hear more and more people saying that we should think less and less of attempting to increase reserves and use available equipment to get more oil from where we know it is.

California is a case in point where horse sense is needed, and we hope that the situation there gets a strict application of it.

Warning from Aruba

WHEN the long expected raid came on the Island of Aruba where the Standard Oil Company of New Jersey has a big refinery, it actually did a minimum of damage to the refining plant. As a matter of fact it did none, except to sink some tankers, most of which were of the small shallow-draft variety.

Nevertheless it affords ample evidence of the necessity of eternal vigilance and it also affords a somber warning that refining facilities in the United States should be expanded and refined products stocks maintained at a high level. If anything should happen to Aruba and Curacao the refining industry in the United States would be expected to take up the slack immediately. Ample stocks would help a lot.

• • • *A hint that some German submarines operating on the Atlantic Coast have been refueling from tankers before they were sunk, was dropped by a government official in Washington last week.*

More Sweet Pickings for Union Leaders

FIFTEEN million new workers will be transferred into war industry work within the year, officials of WPB indicated in Washington last week. These people will come from every portion of the country, the ranks of the unemployed being expected to furnish 10 percent. The remainder will come from the ranks of industry not now engaged in war armament work, from farms and other non-war enterprises.

Union labor leaders are looking at these new prospects with longing eyes. And CIO, which probably will have the inside track on organizing them, is licking its chops over the prospect of millions of new members—and fees.

After making a speech in which the situation in prospect was reviewed, and some of the labor difficulties were discussed, and after pointing out that industry must make its sacrifices, the Management-Labor Chief of WPB, on being asked by the writer if he did not think that a freezing of union attempts at organization would be a good thing with reference to these new workers, declared emphatically that he did not so think!

Later on the same day this writer attended a meeting addressed by a man high in the British Purchasing Commission. He explained how England had gone about converting peacetime industries into plants engaged in war work. He said that a tremendous influx of new workers had gone into industry, many of them women. Asked if the unions made endeavors to unionize these new workers, or to require them to join unions, he said that he was not aware that such effort had been made.

Unitizing East Texas Being Considered

AN especially critical situation confronts giant East Texas. The nearly 16-pound drop in average bottom-hole pressure during January, largest monthly decrease in history, creates a particularly disturbing condition at this time. Reduction of pressure to a new low of 1009.73 pounds presages that many additional wells will cease flowing, and sufficient steel to transform large numbers into pumpers is now practically impossible to obtain. Consequently, many wells face idleness.

The sharp pressure reduction apparently is due to higher oil production and simultaneous growth in water output. Water production now exceeds daily oil volume. Last December 15, water output had reached 439,105 barrels per day of which only about 80,000 barrels was being returned to the producing formation. Thus the field not only faces a grave oil-producing condition, but an equally serious water-disposal problem.

Reduced oil production is a suggested remedy, and no doubt will be adopted in March allowable schedules. However, this will only partially check bottom-hole pressure decline, for the volume of water will continue to grow and is just as important a factor as oil withdrawal.

Under consideration is cooperative return of salt water to the producing zone. This would help maintain the field's bottom-hole pressure, but estimates indicate that to do an adequate job several million dollars must be spent, and a size-

able quantity of steel and other materials would be required. Prospects therefore are not too bright that this scheme will progress rapidly.

Because of the large amount of oil involved, both from a current and a future standpoint, OPC is especially interested in East Texas.

The critical field prospect today is causing some thought in OPC of complete unitization. This would be a drastic move, but since unitization would offer several significant wartime angles the probabilities of such a proposal being enacted cannot be dismissed lightly. If unitized, half or more of the producing wells might be abandoned. Production could be obtained from non-water yielding flowing wells only, thus achieving material reduction in operating costs, elimination of water disposal and pumping. Water elimination would reduce total withdrawal rates by at least half, and create the desired beneficial influence on pressures. Salvage operations on closed-in water-producing and pumping wells would create a large stockpile of casing, tubing, pumping equipment, prime movers, flow lines, tanks, separators and an enormous quantity of scrap, which would reduce the industry's steel requirements substantially.

On the other hand such a program would result in many inequities between operators that would be difficult to adjust. But Washington, necessarily, is looking at everything from the war viewpoint and in this light unitization of the East Texas field, despite the problems involved, is not at all improbable.

Dutch Do Fine Job of Oil Destruction

REPORTS that the Japs had obtained possession of about 85,000 barrels per day crude oil production in the Dutch East Indies before it could be destroyed could not be confirmed during the past week, but on the contrary, inquiry revealed that the probabilities are that a very fine job of destruction had been done to producing wells, refineries and pipe lines.

The refineries all along had been in a bad spot. It was felt that the Japs would leave them intact if there was a chance of securing control of them, but that if they found that they could not get possession they would be bombed. It was known, too, that the Dutch were determined to destroy them if it appeared that they were in danger of falling into the hands of the Japs. So any way the war went the fate of the East Indies refineries appeared sealed.

With destruction of the big refinery at Palembang on Sumatra went facilities in the East Indies for refining aviation gasoline. Destruction of the plant on government orders meant loss of the products of the plant to our allies as well as our enemies.

Destruction of the fields was thorough. Cementing played a big part in the job. Junk helped, too. One oil man when asked how long it would be before the Japs could restore production, said that if he had at his command all the men required and all the equipment, it would take a year just to get production back, without interference from the outside.

The Japs are reported to have held several hundred oil workers in readiness prior to the move into the East Indies, to be used in restoring production. But the Japs are not thought to have great quantities of oil-field equipment.

• • • *Due to the situation in the Far East, it is not improbable that England will be looking to the United States for its rubber supply shortly. There is no synthetic production of rubber in England and a spokesman for the British Purchasing Commission in Washington last week indicated that England would look to the United States for her rubber supply.*

• • • *Unitization here, unitization there, unitization everywhere, seems to be the order of the day under government regulations controlling the operations of the industry. If we interpret the trend of these regulations each succeeding order further establishes the desire for unitized leases and operations. The latest amendment to Order M-68 on February 18 emphasizes the unitization of all separate property interests within the 40-acre area surrounding a drilling operation. The extensive checkerboard lease policy of the industry, viewed in this light, prescribes the unitization of property interests in most instances before continuing development.*

P-98 Expires But New Order to Be Stiffer

P-98 EXPIRES February 28, affording opportunity for WPB to check into oil industry regulations. Watch for major revisions of this; also other petroleum industry priority and allocation orders within the next few weeks. All indications point toward stiffer restrictions.

Recent large appropriations for additional implements of war are to create materially increased demands on raw materials and productive capacity of the nation. Scarce metals will become scarcer, and whereas only 20 percent of the country's productive capacity currently is engaged in war work it is expected to rise to 50 percent. Therefore, the entire priority system is moving toward tighter control of strategic materials and conversion of factories. It is taking a double-edged form—tighter control over scarce materials given non-military industries and also limitations on the number of units manufactured for these businesses.

An order or a revision of M-68 that will limit the number of wells the industry can drill is a distinct probability. Currently WPB is understood to be thinking in terms of 1600 wells a month, or an annual rate of 19,200; but the situation is constantly changing, and later when war manufacturing expands this level might be reduced. Some sort of control over the area in which these wells may be drilled is another possibility of the future—those regions being favored where the kind of oil needed for war can be obtained with the least amount of steel.

Last minute revisions in Order P-98 (see page 58) have eliminated countersignatures on some ratings but other changes are expected when the new order is issued. Also, further revisions in M-68 are expected.

Do not be surprised at anything. We are entering the critical stage of war manufacturing during the next few months.

War and Equities

By RAY L. DUDLEY, Publisher

HERE is something every American man and woman must realize:

Equities which stand in the way of winning this war will and should have scant consideration at the hands of the public.

All of us believe in the general principle of this statement. We know that when a man has given his life at the battlefront he has given more than can be contributed by those who stay at home.

Just as we would condemn the *wanton* loss of life in battle through incompetence, or treason to the cause, so we condemn the *unnecessary* destruction of equities, of rights to and in property.

But just as we know there must be loss of life in combat, we know that there will have to be losses on the industrial front.

Unfortunately, it is difficult for us to realize that sacrifices, or loss of equities, should not just affect the other fellow.

The man or company owning a lease often does not believe that it should be jeopardized because of a WPB or OPC rule. And if safeguards can be raised against the loss of the lease, or other properties, they should be raised and those in government be concerned and aggressive in the erection of the safeguards. This is no more unreasonable than that the lives of the soldiers be safeguarded with whatever provisions can be made without decreasing their fighting power. But if such safeguards cannot be raised, and the loss of the equity becomes necessary to the winning of the war, then the equity will have to be foregone.

The industry which takes an opposite stand will pay dearly for its shortsightedness. The company, or individual, attempting to save its own hide at the expense of others will be no less condemned. The politician, the labor-union leaders, who think that this is a struggle in which he, or they, are immune from sacrifice, will be tried and condemned before that greatest of all our tribunals — American Public Opinion, and it is not likely that a suspended sentence will follow.

This war in which we are engaged is no civil war in which both sides are composed of men with similar ideas of government and conduct. It is no Spanish-American war, no World War I in which the issue was never in doubt from the time we entered it. It is a war to the death. It will determine the fate of a world, and our enemies are prepared as we never dreamed of preparing before Pearl Harbor.

The toll in blood, lives and properties, will be on such a scale as we have never before contemplated. It calls for national leadership which is closely identified with military and naval leadership as we have already seen. That we shall have mistakes in the part of that leadership seems inevitable, but that does not give any American citizen or corporation the right to limit its part in the national defense or offense to criticism alone.

This war is now a war of production. Later this production will permit of a war of relentless action.

In the war of production we have suffered from an impractical attitude on the part of our national administration, and the stern necessities facing

War and Equities—continued

us require greater sacrifices than might have otherwise been necessary.

But we must not cry over spilled milk. Part of our difficulties are being smoothed out. In large part, we believe, they will all be smoothed out.

Last week we listened to Donald Nelson, our leader in the war of production, speak to the editors of 150 business papers covering every conceivable industry in this country. We wish that every man in the oil industry could have heard him.

There was no trick of oratory, no attempt to develop the emotions. There was straightforward earnestness and common sense in his thoughts and words which struck to the hearts of his listeners. If he is not the man for whom we have been looking, then all signs fail.

His thinking as expressed by what he said was sound Americanism. We shall be glad to take our chances with his leadership.

Many things he said were significant, and we want to leave some of them with you:

> "American industry is on trial, the man in the street will hold you and us to account . . . This country faces the most gigantic job any country ever faced . . . It is necessary to keep American industry sound . . . We must get out today the things we would have gotten out tomorrow . . . We must do things we never thought we would have to do . . . *Those of you who fear a change in our form of government will see it more likely happen if you leave this job to the government to do it for you.*"

In the oil business we have a peculiar job to do. It is divided into two parts. The first part is to produce and refine what oil will be needed—in itself a big job. The second is to do it with an unbelievably small amount of materials.

Oil men must know that not only will there be a great dearth of the raw materials from which their equipment is made, but that every factory capable of doing even the smallest part of a defense job will be hard at work on armaments before this year is out. Plants which have been thought too small to be considered, or which have met no encouragement in their efforts to get defense orders will be put to work.

The manner in which we live at home will be drastically affected.

There will be needless sacrifices required — foolish, senseless sacrifices in our industry, unless the best thought of the industry, *unselfishly* applied, is put to work. There never was a more necessary time for sober, constructive thinking — and *unselfish sacrifice*, in our industry than right now.

★

IN THE dearth of equipment with which to drill and the imposition of drilling and priority rules, many companies will face the expiration of leases on properties on which substantial sums of money have been spent in acquiring them and doing exploratory work. The country is sympathetic with a company, or individual, in such a position, and some constructive thinking and some sound suggestions for legislative action might solve this problem. To those who say, "But protective legislation would not be legal," let us suggest that we are at war and in an emergency many things can happen — and in any event, a company or an individual oftentimes can work out an arrangement with a friendly fee-holder — whereas no attempt to solve the problem in any way fails to take into consideration the situation facing us.

★ ★ ★ ★ ★ WASHINGTON ROUNDUP ★ ★ ★ ★ ★

By B. F. LINZ
Washington Correspondent

THE steadily deteriorating stock position on the Atlantic seaboard received attention in Congressional circles as well as OPC last week, with the Cole subcommittee initiating hearings at which all phases of the oil situation will be explored.

First witness before the group was the oil coordinator, who made no secret of the serious concern with which he regards the results of diversions and sinkings of tankers. Hearings will be resumed February 25, with the deputy coordinator and other officials of OPC to testify.

Meanwhile, OPC and OPA officials were working on plans for coupon books for gasoline users in the event rationing becomes inevitable, although Coordinator Ickes repeatedly voiced his dislike of rationing and his determination to do everything possible to avert it.

A number of steps have been ordered or will be taken to ease the coast situation, including the pooling of tankers, the shift of gasoline tankers to oil transport, borrowing of tank cars from adjacent districts, and a new effort to secure priority for the proposed Texas-New York pipe line.

• • • Important to the industry was an amendment of Conservation Order M-68 setting forth a schedule of distances to be observed between wells. The amendment followed the suggestions made late last month by Texas Railroad Commissioner Jerry Sadler (THE OIL WEEKLY, *February 2)*, who last week proposed to short-cut the pipe-line priorities by digging up some of the less essential Texas lines and relaying them to serve the North Atlantic area.

• • • The broad objectives of the several agencies which Ickes heads, to mobilize the strategic natural resources of the nation, were outlined in a program in which definite steps were listed for the greatest possible development, with a minimum of sacrifice of conservation principles, of oil, power, fuel, helium, metals, food, land, water, and timbers. Particularly important was a "seven-point program" for oil, laying down the general principles to be followed by the Interior Department and OPC.

Things to watch for:

Issuance by the Texas Railroad Commission of orders dealing with East Texas salt water.

Promulgation by WPB of preference ratings for industrial users of fuel oil.

Renewal of efforts to secure priorities for the Texas-New York pipe line.

A WPB prohibition upon the use of tubular steel by the industry.

Ickes Discloses Administration's Wartime Oil Objectives

»

Congress Looks into Supply and Synthetic Situations

»

Gasoline Rationing Plans Ready If and When Necessary

»

Spacing Patterns in New Order

★ ★ ★ ★ ★

Ickes Maps Seven-Point Oil Program for War

A seven-point program to mobilize oil resources for war was announced by Secretary of the Interior Ickes February 22 as part of a general plan for the marshaling of all the strategic natural resources for a victory drive.

"Without petroleum products, the war machine which the United States and the United Nations are now perfecting could not function," Ickes said in discussing the part to be played by oil. "National petroleum production must be increased by the most efficient methods to fill mounting requirements. The production and operation of mechanized armies, self-propelled artillery, substratosphere bombers, and multiple-ocean navies require unfailing supplies of high-quality gasoline and lubricants and other oil products. The expanding industrial second line of defense and the third front at home also must be supplied. To meet the requirements, United States production may have to be raised to 1,500,000,000 barrels of oil a year."

The program, with respect to oil, will be carried out jointly by the Interior Department and the Office of Petroleum Coordinator, the latter, it was pointed out, having started preparations to meet the challenge "seven months before Japan made the Pacific a misnomer for the western ocean."

The oil program, some parts of which already are under way, will be as follows:

"1. To organize petroleum production based upon sound engineering techniques so that operating wells and fields can produce at sustained rates without injury to our remaining reserves and so that the crude oils, condensates from high-pressure fields, and natural gasolines needed for aviation gasoline and lubricants, toluene, synthetic rubber, and other specialized products will be available in the quantities required when needed; to stimulate exploration for new reserves, and, through cooperation with state regulatory bodies, to leave in safe underground storage those crude oils not immediately important to the war effort. (Office of the Petroleum Coordinator.)

"2. To multiply the industry's capacity to manufacture high-octane gasoline for war planes to as much as 200,000 barrels per day; to stimulate the financing and erection of 100-octane plants; to control closely the aviation gasoline supply to insure its appropriate use; to organize the natural gas and natural gasoline industries to meet plant fuel requirements and to obtain the maximum production of the components of aviation gasoline, as well as rubber and other synthetic products, and to stimulate the production of aviation lubricants. (Office of the Petroleum Coordinator.)

"3. To establish new and more effective transportation methods required in

moving blending stocks for aviation gasoline; to reshape the complex transportation system of the oil industry by substituting tank cars, trucks, barges and pipe lines for tankers diverted to war service. (Office of the Petroleum Coordinator.)

"4. To formulate and, if needed, to direct marketing programs to insure the best distribution of available supplies for civilian uses in the event of the disruption of normal deliveries; to coordinate marketing and distributing facilities so as to maintain inventories, and to find and obtain petroleum products for use by the armed forces, essential industries, and civilian activities if normal channels of procurement do not bring about the necessary results. (Office of the Petroleum Coordinator.)

"5. To formulate plans for the manufacture of essential components of synthetic rubber from petroleum products, including butadiene and styrene; and to stimulate expansion of plant capacity for the manufacture from petroleum of toluene for explosives. (Office of the Petroleum Coordinator.)

"6. To engage in an active geological exploration campaign with the view of determining all possible areas in which prospective drilling for new deposits of petroleum and natural gas may be successful. To promote and encourage exploratory operations on lands owned or controlled by the United States having potential value for petroleum products; to take steps to insure adequate and proper development of known reserves on such lands, and to cooperate with industry and state authorities in attaining these objectives where such lands are interspersed with lands not under exclusive federal control. (Geological Survey.)

"7. To make available to the petroleum industry the latest developments in technical methods, practices and procedures in the production, handling, transportation and storage of petroleum and its products; to make available fullest technical guidance in the protection of petroleum in storage against deterioration, contamination, fire or sabotage and other hazards; to keep the industry fully advised as to the trends of demands and requirements in order that it can gauge its necessary operations in advance so that the supply of products may be continuously available where, when and as needed. To conduct all of these activities in such a manner as to bring all units of the petroleum industry, large and small, into the war program; and to execute that program so that no unnecessary dislocation of competitive positions in the industry, or hardship to the general public, shall occur. (Office of the Petroleum Coordinator, Geological Survey, Bureau of Mines, Petroleum Conservation Division.)"

Also included in the program are steps to be taken with respect to helium, toward which the government already is moving by drilling four additional wells, increasing the capacity of the plant by 50 percent by installing an additional production unit, with plans for construction of an additional plant.

The helium program will double the 1941 production this year; continue research to reduce costs of production, and survey fields suitable for helium production, to select sites for additional helium plants.

ARUBA REFINERY ATTACKED

Aerial view of the large oil storage and refining installations of the Lago Oil & Transport Company on the Island of Aruba, reported shelled by a submarine last week. The U-boat also torpedoed three tankers. The refinery was not damaged extensively. Aruba is a small Dutch island off the coast of Venezuela, occupied by United Stated troops recently. (International News Photo.)

Rationing Plans Made If Others Fail

Hopeful of avoiding rationing of gasoline, OPA and OPC officials last week nevertheless were laying their plans for such action if and when it becomes necessary.

Also, it was disclosed, plans are being drawn up for the issuance of preference ratings for consumers of heavy fuel oil, the product in which the shortage is most serious.

The first definite step toward securing a curtailment of consumption of fuel oil was taken by OPC February 20, in an order establishing schedules for deliveries to all types of consumers and to resellers.

The plan, it was declared, will have the practical effect of making an additional 3,000,000 barrels of fuel oil available for East Coast consumption between now and April 1. The program was developed by the supplies and distribution subcommittee for District 1, under instructions from the coordinator in recommendation No. 33 (THE OIL WEEKLY, *February 9*), and provides that no marketer shall deliver fuel oil to any consumer for uses other than domestic heating if the consumer's stock of oil is in excess of the amount he would normally use during the ensuing 14 days. If a consumer's stock drops to or below 14 days' supply, a marketer will be permitted to sell or deliver oil up to but not exceeding the capacity of a single tank car or other transportation unit normally used in making deliveries to the consumer, or an approximate two-weeks' supply, whichever is less.

The restrictions will not apply to hospitals, to resellers or consumers at water terminal locations which require that larger storage be carried because of probable inability to make additional deliveries when required, due to freezing of all or a portion of the water route, or where delivery has heretofore been made and is normally made in ocean-going tankers.

Deliveries of oil for domestic heating will be made only if the consumer's supply falls below 20 percent of the capacity of his tank, and will be limited to the amount required to bring the tank supply to 75 percent of capacity. Pointing out that no restrictions are placed on consumption or on total deliveries over a period of time, the deputy coordinator declared that

the plan "is not rationing and it should not be construed by anyone as rationing. Rationing comes into effect only when the consumption of a commodity is curtailed and controlled," he said. "This plan does not control consumption."

Experts of the price-fixing and oil agencies met Thursday for a discussion of gasoline rationing plans, to be carried out on the basis of coupons if it becomes necessary to curtail consumption by fiat.

But in the meantime, the coordinator disclosed, he planned immediately to secure engineers to make studies of the possibilities of the conversion of industrial oil-burning plants to coal, was seeking to secure between 5,000 and 10,000 tank cars from the Middle West and was bringing about the switch of tankers from gasoline to fuel oil transport.

No Slump Expected Soon

Ickes made it clear that he had little confidence in any voluntary consumer rationing or curtailment as a means of meeting the shortage, nor did he think the effect of tire rationing on gasoline demand would become apparent to any marked degree for another four to six months.

He said he did not believe either a call upon the public to conserve gasoline or a reimposition of the filling station curfew would be justified "until we foresee the necessity for rationing gasoline."

"We hope it will not be necessary to ration gasoline," he said. "We hope the companies will go ahead with their plan for voluntary rationing. We are not yet able to make up our minds that rationing is necessary and we are going to do everything possible to prevent it."

The coordinator revealed that the tank-car movement of oil into the East Coast area last week made another new record at 256,700 barrels daily, an increase of some 33,000 barrels over the preceding week. This volume, he pointed out, will be materially increased if additional cars can be secured from the Midwest and the railroads are able to move them promptly.

If rationing is resorted to, the OPC head said, it will probably be on a nation-wide basis, partly because facilities for the East Coast will be drafted from other areas and partly because it is not felt fair that the eastern states should bear the brunt of rationing alone.

• CONGRESS •

East Coast Supply and Synthetic Output Up for Consideration

Questions of oil came up on both sides of the Capitol February 17, with Coordinator Harold F. Ickes telling a House subcommittee of the increasingly serious East Coast supply situation as a Senate subcommittee investigating defense met behind closed doors to consider the rubber situation, with particular reference to the influence of international cartels involving Standard Oil Company on the development of synthetic rubber.

Using the synthetic rubber program as a springboard, Senator Guy M. Gillette of Iowa this week sought to secure the creation of a special Senate committee to investigate the production of industrial and synthetic alcohol and synthetic rubber, with particular reference to the part played therein by the oil industry.

Gillette introduced a resolution to authorize the investigation, explaining that it would cover the development of the all-industry suit now pending in the District of Columbia federal court and the efforts which have been made to secure a consent decree.

The senator criticized officials of the War Production Board for their position that present alcohol production facilities are adequate and that it was unnecessary to utilize grain—his state has 114,761,000 bushels of corn in storage from crops prior to last year—and that all needs could be met by the production of synthetic alcohol from petroleum.

The Senate Agriculture Committee took the Gillette resolution up on February 19 and voted unanimously to recommend it to the Senate.

However, it demanded a change in the measure to provide that the investigation be made by the agriculture committee instead of the special committee which Gillette sought.

Ickes Before Cole Hearing

Appearing before the Cole subcommittee of the House Interstate and Foreign Commerce Committee, presided over by Representative Clarence F. Lea of California in the absence, because of illness, of Representative William P. Cole, Jr., of Maryland, Ickes laid down a multiple-point program to deal with the East Coast situation, including a new effort to promote the Texas-New York pipe line but with gasoline rationing as a last resort.

Steps to Be Taken

Making no secret of the general perturbation over the situation created by the diversion of many tankers to military use and the numerous sinkings of the past 10 weeks, and paying high tribute to the industry, large and small, for the way in which it has cooperated, Ickes listed a number of steps, some of them recommended by the industry group called to Washington February 10, designed to improve the supply situation, as follows:

1. Continued maximum use of railroad tank cars, with a speeding up of turn-around, and a loan to District No. 1 of 10 percent of the cars available in Districts No. 2 and No. 3.

2. A 15 percent curtailment in consumption on the East Coast during the period from February 15 to April 1.

3. A possible filling station curfew, closing them from 7 p.m., to 7 a.m., and all day Sunday.

4. Diversion by the Maritime Commission of some ships with coils, now in clean service, to transport heavy fuel oil.

5. Adoption of a priorities system for heavy fuels and the switching of industrial consumers from oil to coal where possible.

6. A new effort to secure priorities for steel for the long-distance pipe line.

7. Consumer rationing—but only as a last resort.

Ickes told the subcommittee that

[*Continued on page 56*]

Prospecting Total War

By E. E. ROSAIRE
Owner and Manager, Subterrex
Houston, Texas

Can we, under stress, find oil fields which are strategically located? This is the big question raised by the author of this highly interesting article who answers his question by stating that the industry must revise its strategy to look for petroleum rather than a trap where it may or may not be present, and this will force a revision of prospecting tactics.

Dr. Rosaire has had a broad experience in geological, geophysical and geochemical fields and is a former president of the Society of Exploration Geophysicists. His outline of the need for a changed perspective presented herewith, while concerned primarily with prospecting strategy, has much broader application under a total-war economy.

SINCE the start of the war, we have been forced to face realities, often with a rude shock to complacency and self satisfaction. Few of us yet can grasp the magnitude of this crisis. Some inklings became apparent as we saw the pooling of automobile manufacturing facilities, of synthetic rubber and of aviation gasoline patents. Will the now so precious steel be made available for all wildcat wells, as some of us so fondly hope? Or, rather will there be preference ratings on wildcats, and possibly a call to pool prospecting resources too?

The readjustments involved have thrown into clear perspective our general tendency to disregard and shunt aside sound if dire prediction in favor of the more pleasant acceptance of "little or no change." Why not? Look at the record; after all, our performance has been good! We are the biggest producers of steel, oil, food, etc., and for some time we have had the highest standard of living in the world.

And yet, of late, within our own country, Stettinius assured us of an adequate supply of aluminum, to be followed almost at once by frantic plans to increase production and the request for civilian donations of pots and pans. The President and Gano Dunn assured us of an adequate steel capacity; today there are hectic efforts to add new plants and increase the production of existing facilities. Jesse Jones bargained calmly for rubber; today tires are no longer available for civilians, and synthetic rubber plants are hurried to the blue print stage. Less than a year ago Dr. Robert Wilson assured us that we had a plant capacity adequate for aviation gasoline; today that plant capacity must be more than tripled.

Of late, there are others in the same fix. Outside of the United States and well before 1939, the Nazis adequately blueprinted the destruction of Poland and France. For the much larger scale of continental war with Russia, their 1941 blue prints proved to be as inadequate as ours for aluminum, steel, copper, rubber and aviation gasoline.

In the present crisis, there appears to be a necessary perspective requiring a magnitude of planning for which many executives, no matter how successful in the recent past, have proved to be men of inadequate vision. Today, fair or even good performance is not enough!

On the other hand, there have been outstanding cases of long-range prediction which, though discounted at first, have rung true with time.

A Look at Some Long Range Predictions

Twenty years ago, Colonel Mitchell was court martialed for daring to predict that the offensive power of the airplane had doomed the capital ship. A reluctant and partial admission as to the efficacy of shore-based aircraft followed when the British were beaten off Norway and then driven out of Crete. Even so, the complacent admirals had to undergo the disaster at Pearl Harbor and the sinkings of the Prince of Wales and Repulse off Singapore before their shortsightedness was revealed. Mitchell's posthumous elevation to the rank of major general is justice in the abstract, but does little to recover the ground lost by complacent disregard of his advice.

Seven years ago, DeGaulle, then also a colonel, showed how France was unusually vulnerable to invasion in view of potential developments in modern warfare, and proposed the formation of armored divisions and their coordination with offensive action from the air. Though not subjected to humiliation similar to that of Colonel Mitchell, DeGaulle was castigated severely. His seniors preferred to

Strategy in Economy

fight the next war as they had won the last, but lost their beribboned reputations when France went down to decisive defeat before an onslaught such as DeGaulle had foreseen and made by troops equipped as DeGaulle had advised. DeGaulle's vindication by events is little comfort to him, to his former superiors, or to the French people.

About the same time a man named Winston Churchill warned England of the growing Nazi menace. Since he was a man of substance, his brush-off was less obvious. Meanwhile Baldwin occupied the stage with his maneuvers to give the bum's rush to a king straying out of orthodox paths. For that, Baldwin was made a peer of the realm, and his successor sought peace at any price in our time. When the blow fell, they called in Churchill the Cassandra, a substitute quarterback sent in to call signals on the fourth down with the ball on the six-inch line, his punch-drunk team on the short end of a top heavy score.

Prospecting for petroleum also has had its Cassandras who warned of diminishing returns from structural prospecting, our only strategical approach. Of late, statistics accumulate with increasing rapidity which show that our years of reserve in sight shrink alarmingly in the face of mounting consumption and decreasing rates of discovery, while a real petroleum shortage develops in our most important center of consumption and export. But, six years ago A. I. Levorsen pointed to the decreasing magnitude of remaining structural objectives, and called attention to the possibility of undiscovered elephant pools stratigraphic in type. About the same time Blau and Rosaire warned of the imminent need for new types of prospecting techniques. By producing evidence that recognizable nonstructural anomalies were associated with petroleum accumulation, they opened the doors for a major renaissance of direct prospecting methods, in spite of which progress the Petroleum Industry War Council has reported that, since the advent of geophysics, no major advance has taken place in the art of finding oil.

The pattern so far is that of unmaking reputations acquired by seniority and the "old school tie." The real reputations are yet to be made, those founded on sheer ability and outstanding adaptability to an environment of crisis.

Those yet-to-be-made reputations will not come as a matter of course. In times of stress like these, competent initiative is a gem of the first water. The tremendous steps and gigantic efforts ahead of us verge on the impossible, yet, in truth, we now must lift ourselves by our very boot laces! Will that come by direction from Washington, or by a renaissance of that virility which made us a free people operating an economy of free enterprise?

Taking the Initiative

It appears that a certain measure of this latter now is under way. *Time*, of January 5, 1942, describes how Girdler and Ford, lone wolves and rugged individualists of record, have taken the initiative in the fields which they know best. Ford is developing the applications of mass production to aviation engines and aircraft; through Girdler's efforts Republic Steel Corporation has stepped far out in the lead in the manufacture of essential electric steels, and on his own, Girdler has taken over the control and management of Consolidated Aircraft. These steps not only operate to the betterment of the nation in its hour of peril, but also they are foundation stones for better business in the peace to come. After all, the Principles of War hold for business as well, and both currencies are made up of the same factors. In business, the expendibles are money, material, time, and only incidentally men. In war the expendibles are men, material, time, and only incidentally money.

If we are to exist as the First Power, our military leaders must display competent boldness in manipulation of the tools of war in the various theatres of operations. If they are to be properly supplied with these tools, and if capitalism is to exist as other than a museum piece, the virility shown by Girdler and Ford must be duplicated many times over.

Estimate of the Situation

As prospectors for petroleum, we have a good record on the books. In less than a generation of skyrocketing consumption, we have set up reserves in sight probably large enough to justify our present plant. We enter upon a national crisis equipped with petroleum production capacity apparently somewhat more than adequate. That performance is unequaled elsewhere in the world!

However, consider the declining dry hole—major discovery ratio, recently shown by Wallace E. Pratt to be approaching rapidly to its highest point in the last 20 years, at a time when vastly increased consumption is requested of the industry. Consider also the practice to find oil far removed from major consumption centers, and our primary reliance upon vulnerable tanker operation. Consider again how our own spokesman insist that the non-technical wildcatter is an integral part of prospecting, and their justification in that our biggest field, East Texas, was discovered by such a layman.

These considerations are blowing straws that hint of a coming ill wind. Are we prospectors to awake and find ourselves in the same position as the army of France which, only two years ago, complacently considered itself the best in the world? Though that opinion was shared by many of the more verbose authorities, it proved to be a fantasy which was shattered in less than six weeks!

As with the rest of the total-war program, the petroleum industry's

recent record is one of backing and filling. Only last summer we heard Secretary Ickes wailing about a petroleum shortage on the Atlantic Seaboard, which developed into a better hours program for the filling station operators. Based on inside dope, Moffet squawked about an excess of tankers assigned to the trans-Atlantic run, while charges and counter-charges were fired and back-fired as to the number of idle tank cars. We saw, of all people, a New Dealer, that same Harold Ickes, advocating to no avail that the petroleum industry build a gigantic pipe line to the East Coast, while the Department of Justice sharpened its snickersnee in the form of anti-trust suits against the fair-haired boys of the industry. Dr. Wilson's assurance of adequate aviation gasoline capacity soared into view with the graceful sweep of a clay pigeon, to fall with a dull thud, attracting not even a snap shot. Out of Washington comes the forty-acre well spacing together with the assurance that pipe will be made available for any and all wildcats, when recent and not so recent discoveries are shut in or prorated by inadequate outlets. And then, in the midst of that industry-wide take-off on "Hellzapoppin," we went through the Pearl Harbor disaster, the elimination of Malayan and East Indian rubber, the tanker sinkings on both seaboards, and the rationing of tires and new cars. Today we ask the nation to divert vast amounts of now so precious steel from the armament industry for pipe lines across geological provinces which certainly contain petroleum that we have not as yet discovered. Where, we must ask, where do we go from here? If there ever was a fumbled and now free ball rolling loose on the field of play, this is the time!

Active or Passive Course

There are two choices open to the industry, the active or the passive course of action. We can mill around, listening to Washington and to the so-called best minds of the industry, poke along as we have been doing, secure in the present assurance that we can get steel for all wildcats, sit back to bask in the expectation of easy days of 40-acre spacing, squawk for an increase in the price of crude, and take things as they come. Such would be the passive approach!

If we choose that course, then just as certain as higher taxes and a lower standard of living, we will find ourselves on the hot seat along with the admirals, the high command of what was France, Stettinius, Gano Dunn, Jesse Jones, and Robert Wilson. Then, once again, the New Dealers will point to business men who misered their talents and shortsightedly missed an opportunity to rise to our national needs in time of grave emergency. What then of the men of the petroleum industry, who have prided themselves that they typified the advantages of a system based upon free enterprise? Certainly, such will come of the passive approach!

In contrast, the active course is based upon a recognition of fundamentals. Granted that it is bewildering to balance the opposing factors of vastly increased military requirements against civilian consumption augmented by three shifts a day seven days a week, but curtailed by tire and automobile rationing. Certainly, two things are inevitable.

War Changes Trade Relations

We entered the last war dependent upon Austria for technical glass and upon Germany for drugs and dyes. We came out of that war self-sufficient in both, thereby making international trade that much more difficult. We entered this war dependent upon Japan for silk, and upon Malaya and the Indies for rubber. We will come out of this war self-sufficient in synthetic substitutes for both, two more major blows against international trade. The present rubber shortage thus must be considered as temporary, with a return to increasing civilian consumption of petroleum and petroleum products.

More than ever, then, the Industrial Triangle and the Eastern Seaboard will remain our biggest consuming areas, whether for local consumption or for export to Britain. That major market faces curtailment of even greater magnitude due to a shortage of petroleum products. That shortage must follow from the elimination of coastal tanker operation either by their diversion to naval use, or its materially decreased efficiency due to convoy action forced by the hostile interference which already has appeared. Anyone of us was within his constitutional rights in telling "Honest Hal" that he was out of order if tanker diversion to Britain so much as inconvenienced our gassing-up at any hour of any day or any night. This time, it is different, for that tanker diversion now is for *our* planes, *our* tanks and *our* ships across reaches of the Pacific that make the Atlantic look like a mill pond.

Fundamentally Sound Strategy

The answer, and the only answer that we dare consider is the discovery, not just of more oil fields, but of oil fields so located that the resulting petroleum can be delivered readily by existing facilities not only to the Eastern Seaboard and the Industrial Triangle, but also to the major theatres of war. Within the United States, those existing facilities cannot include tankers, but only railroads, pipe lines and barge lines already in operation. There is this also to be said, that if we take such steps as practical men who intend to end this war our way and within our time, then we also will have acted as practical men for the peace that we thereby have made certain will follow. We must replenish our national treasures now being sacrificed on the altars of the god of war, a task not to be achieved by national and international juggelry of paper work and red tape, but by discoveries and inventions of major magnitude. If that be the profit motive, let New Dealers make the most of it!

Such are the considerations which determine prospecting strategy on a national scale. Similar considerations must be faced on an international scale.

Although the oil of the East Indies has not played a major part in world consumption, in the Southwestern Pacific it has played a most important part in the local economy as well as that of Australia, the Philippines, Malaya, Thailand and Japan. Consider the situation now that the Japanese drive has smashed across the Philippines to Singapore and down to Java and Sumatra. We must assume that Australia remains a Pacific bastion for the United Nations, for we dare not contemplate the first order calamity which its loss would entail. Even if the Japanese drive is stopped short of that high water mark, the East Indian oil fields have been destroyed, or, if not, their operation can not be resumed at full capacity until some time after we and our allies there have established command of the air.

That leaves Australia, our then

remaining foothold in the Southwestern Pacific, without nearby sources of petroleum. The problem soon may not be that of fending off murmurs from civilians deprived of some of their normal ration of gasoline and rubber, one to be ameliorated by patriotic requests to observe "gasoline-less Sundays." Rather we may face the dire problem of fighting men equipped with the tools of their trade, whose interceptors could not rise to knock off otherwise harmless Stukas, whose tanks could serve only as immobile pill boxes, and whose fighting ships lay as helpless as the Richelieu at Dakar.

Then, on an international scale, a strategical "must" would be for the prospecting profession to rise to the occasion and establish adequate reserves of petroleum in Australia within a very limited time. If we failed in that assignment, then the world would rightly question the intrinsic worth of a profession which for nearly a generation has looked for structure which might or might not contain petroleum, but not for petroleum itself, the very alpha of our existence. We would look silly indeed, since our non-technical predecessors did just that, and did it quite successfully.

It is time for us as a profession to take stock of ourselves. It would not be unreasonable to consider as a test maneuver the recent prospecting sweep into Mississippi after the discovery of Tinsley, where with all our modern equipment, we bagged only two oil fields which as yet are of minor importance. Now, when time and steel are of the very essence, and in view of that most recent unsuccessful foray into an inactive province, can we expect to establish adequate reserves in strategically located geological provinces also on the inactive list? Is that pipe line to the East Coast really needed?

Let us find out why we have not been able to establish larger oil reserves in the Michigan Basin, where a modicum of production has been established only by great effort, in Western New York, where even tiny gas wells pay out in a matter of months, or in the Georgia Basin, where adequate supplies of natural gas at least would have cushioned the recent power shortage in the Southeastern States. The discovery of major pools in any of those areas would have produced a boom as great as that which we witnessed in Illinois, yet if we have not achieved such discoveries in the piping days of peace, will we be able to attain such now necessary objectives in a war strained economy? Why haven't we? Why can't we? Better that we find out why here at home before we are requested to tackle the job in the Pacific Northwest or in Australia.

The basic reason lies in our inhibitions with regard to structural prospecting. If the surface mantle blanks out visible evidence of structure, we wait until the construction gangs open up new road cuts or we rely upon the reflection seismograph. With this latter, we frequently are unable to get reflections at critical locations, or if we do, they may be too shallow, or too deep, or, due to the presence of unanticipated velocity changes, may yield erroneous depth predictions which cannot be corrected because of the lack of well control. Then we must wait for the accumulation of a dry-hole backlog of costly subsurface data, a time-consuming process. All this in spite of the lack of relationship between magnitude of structure and magnitude of petroleum accumulation, and the well known fact that only half of our "elephant" pools are cases of simple structural accumulation.

Granted that given time and steel, and in our own peculiar ways, we can find oil in adequate amounts. We have done so, and possibly we can do it again. But in the recent past we have displayed no well developed tendency to discover strategically located petroleum reserves, and tomorrow we may be asked to do just that according to a schedule not of our own making. Tomorrow, good performance will not be enough! Are we, within our own profession to encounter a surprise as demoralizing as that which happened at Pearl Harbor?

Examining the situation dispassionately, we arrive at the following. Our past performance is good in view of our present established reserve. That performance has followed from our prospecting about as we chose, which meant in those areas where our structural prospecting tactics were effective. Yet, as a result, our major discoveries are not too well located strategically, and our greatest consumption centers are dangerously dependent upon tanker operation, which is certain to be curtailed severely if not eliminated altogether. Further, we, as trained technicians, admit that the random operations of laymen are an integral part of our operations, a point which we could hardly soft-pedal in view of the fact that such non-professional activities led to the discovery of our biggest field, East Texas. Except for that happenstance our reserve picture would be dark indeed today, and we would not be as far along the road to better conservation and operation practice, a road down which we since have gone rather unwillingly. In fact, our non-technical predecessors and colleagues have rivaled our professional performance in establishing major production in virgin geological provinces!

Can we, under stress, find oil fields which are strategically located? To do so we must venture into inactive provinces, and the most recent of such forays, utilizing our most potent method, was at best only a technical success. In perspective, it appears that our strategy has been barely good, and today, good is not enough. We must revise our strategy, and returning to that of our non-technical predecessors, look for petroleum rather than for just a trap within which it may or may not be present. That change in strategy will force a revision of our prospecting tactics as well, but since when have we Americans failed to invent the tools and develop the methods required to do a better job? With the proper perspective we can take this task too in our stride!

★ OIL IS AMMUNITION ★ ★ KEEP 'EM PRODUCING ★

Income from Prorated Wells

Below Averages for 1937 and 1938

By L. J. LOGAN, Associate Editor

DIMINISHING allowables and depressed crude-oil prices exerted an extreme retarding effect on exploration and oil field development in early 1941 but subsequently became less formidable deterrents to the drilling of new wells. And for the immediate future, investment in new oil wells may be made more attractive, as further raising of the allowables of prorated wells may occur, because of the shortage of materials and paucity of new flush wells and because of the anticipated extension of production restrictions, under pressure of the federal government, to wells in several states where proration has never been introduced, particularly Illinois and Mississippi.

Meanwhile, income from each prorated well will be bolstered by maintenance or possible eventual raising of presently pegged crude prices, which are above the levels of recent years; although many operators contend that postings as now fixed by the government are less profitable than were the lower prices of early 1941.

The arresting of the steady downward trend of income from the average prorated well did not occur until a critical point had been reached—a point where comparatively little incentive for drilling new wells remained; and the turn for the better was sorely needed for assuring continuance of the exploration necessary for maintaining adequate crude reserves for the nation.

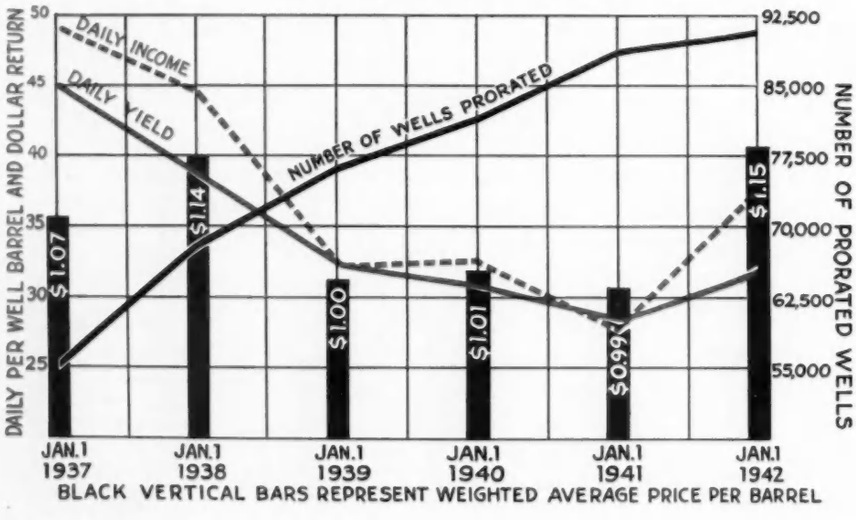
However, the improvement of income from the prorated well within the past year has not canceled all the decrease that occurred after 1937 and 1938, and further recovery of the daily average income per well to levels of those years would require primarily the additional advancing of crude prices. Further liberalizing of allowables would somewhat increase the dollar-return from the capital invested in the prorated oil well, but no substantial boon to the producer is in prospect from higher allowables, as the number of prorated wells currently is at a new high, while the war-disturbed future is expected to bring smaller, rather than larger, over-all demand for petroleum products.

Even if crude prices were further increased by the 5 cents a barrel that would be necessary to put them back at 1937-1938 levels, the daily average income from the prorated well still would not be as favorable as in those years, because there is no probability that allowables will recover to the levels of those years, when the market was shared by much fewer prorated wells than now participate in it.

On January 1, 1937, only 56,508 wells in the United States were restricted in output, through proration regulations, and the average prorated well was allowed to produce 45 barrels daily and thereby to earn an income of $48.15 a day. A year later, the average daily allowable per well had been pulled down to 39 barrels, through participation of an increased number of wells in the available market demand for crude; but crude prices remained good, and there was only a comparatively small decline in the daily income from the average prorated well, to $44.46.

Late 1938 brought, however, a general reduction in crude prices and a slowing down of demand for petroleum products, and yet the industry continued to drill new oil wells in comparatively large volume, with the result that during 1939, 1940, and early 1941, well allowables were seriously depressed and income from each producing well was extremely low. The retarding effect on the current income from the prorated well was accentuated, moreover, by intrusion of the unprorated output of flush wells of Illinois and Mississippi into the national production

Income from average prorated well turns upward after long decline, but still far under levels of 1937 and 1938.



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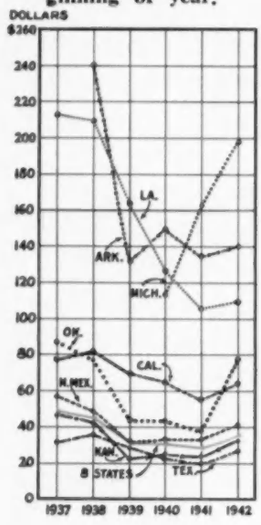
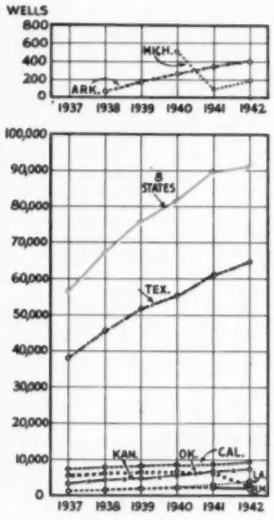
LINE PIPE...NORMALIZED CASING AND TUBING

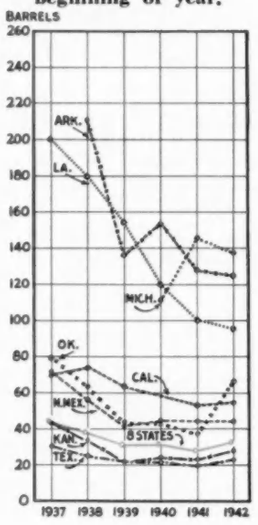
Average daily income per prorated oil well at beginning of year.



Number of wells prorated at beginning of year.



Average daily allowable per prorated oil well at beginning of year.



volume. The roles of Illinois new pools and Mississippi fields have been as here indicated:

	Daily Production, Barrels		
January 1 of:	Illinois New Pools	Mississippi Fields	Total
1937	.....	.....	.....
1938	24,400	.....	24,400
1939	121,350	.....	121,350
1940	322,050	2,450	324,500
1941	319,700	14,900	334,600
1942	375,800	72,550	448,350

Allowables in the prorated states would have been higher if Illinois and Mississippi wells had been curtailed below the rates at which they actually have produced. But the gain for the average prorated well would not have been impressively great, as Illinois wells have produced at rates not materially above those of the average prorated well and below the averages for several prorated states.

On January 1, 1941, for example, producing wells in the Illinois new fields numbered 7901 (600 flowing and 7301 pumping), and their average daily output was 40½ barrels, which was above the 28 barrels allowed the average prorated well but less than the allowables of 128 barrels daily in Arkansas, 53 in California, 100 in Louisiana, 145 in Michigan, 44 in New Mexico, and 37 in Oklahoma, although more than the 23 barrels in Kansas and 20 in Texas. On January 1, 1942, output of Illinois wells was even more moderate, the producing wells of the new fields having increased to 10,541 and their output having declined to 36 barrels daily, compared with an average allowable of 32 barrels for all prorated wells and with average allowables of 125 barrels in Arkansas, 55 in California, 92 in Louisiana, 138 in Michigan, 44 in New Mexico, 66 in Oklahoma, 28 in Kansas, and 23 in Texas. Mississippi wells, in contrast, have produced at rates well above those of nearly all prorated wells, the daily average output per well having been 134 barrels on January 1, 1941, and 217 barrels on January 1, 1942. However, Mississippi wells are comparatively few in number and small in aggregate production, the state having had on January 1, 1941, only 111 wells that accounted for its production of 14,900 barrels daily, and at the beginning of this year,

[*Continued on page 60*]

Income from Prorated Wells Relatively Low Despite Upturn

(Data as of January 1 of each year.)

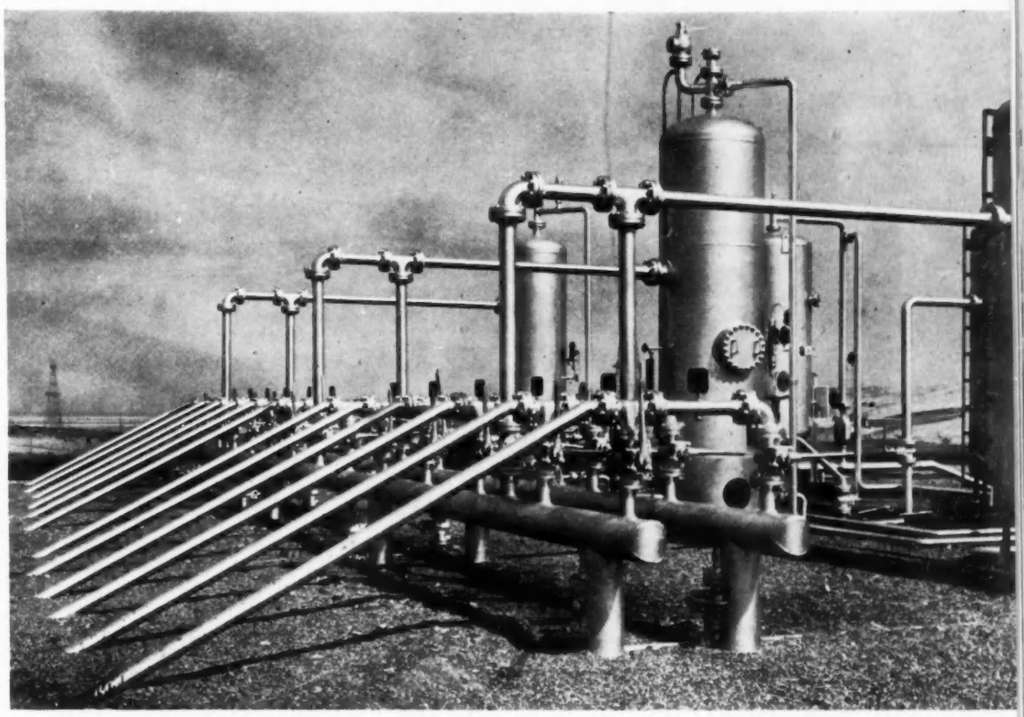
STATE AND YEAR	Number of Prorated Wells	Daily Average Allowable per Prorated Well (Barrels)	Average Price of Crude Oil per Barrel	Average Daily Income per Prorated Well
Arkansas:				
1937	*	*	*	*
1938	68	211	$1.14	$240.54
1939	181	136	.97	131.92
1940	271	154	.97	149.38
1941	358	128	1.05	134.40
1942	411	125	1.12	140.00
California:				
1937	†7,250	†70	1.10	†77.00
1938	†7,940	†74	1.10	†81.40
1939	†8,220	†63	1.10	†69.30
1940	8,666	58	1.10	64.35
1941	8,984	53	1.03	54.80
1942	9,341	55	1.15	63.83
Kansas:				
1937	3,316	43	1.10	47.30
1938	4,281	34	1.22	41.48
1939	4,979	22	1.02	22.44
1940	5,602	24	1.02	24.48
1941	6,617	23	1.02	23.46
1942	7,196	28	1.17	32.76
‡Louisiana:				
1937	1,050	200	1.06	212.00
1938	1,271	180	1.16	208.80
1939	1,492	155	1.05	162.75
1940	1,984	120	1.05	126.00
1941	2,652	100	1.05	105.00
1942	3,689	92	1.20	110.40
Michigan:				
1937	*	*	*	*
1938	*	*	*	*
1939	*	*	*	*
1940	517	111	1.02	113.22
1941	97	145	1.12	162.40
1942	199	138	1.44	198.72
New Mexico:				
1937	1,285	71	.79	56.88
1938	1,890	56	.88	49.28
1939	2,356	42	.75	31.50
1940	2,160	44	.75	33.00
New Mexico Cont.				
1941	2,404	44	.75	33.00
1942	2,293	44	.92	40.48
Oklahoma:				
1937	5,480	79	1.10	86.90
1938	6,068	63	1.22	76.86
1939	6,234	43	1.02	43.86
1940	6,559	43	1.02	43.86
1941	6,678	37	1.02	37.74
1942	2,872	66	1.17	77.22
Texas:				
1937	38,127	30	1.06	31.80
1938	45,734	25	1.15	35.65
1939	51,980	22	.98	28.42
1940	55,196	22	.98	21.56
1941	61,288	20	.98	19.60
1942	64,711	23	1.15	26.45
§Total or Average for 8 States:				
1937	56,508	45	1.07	48.15
1938	67,252	39	1.14	44.46
1939	75,442	32	1.00	31.70
1940	80,955	32	1.00	31.60
1941	89,078	28	.99	28.12
1942	90,712	32	1.15	36.80

* No proration in effect.

† California data not available for 1937, 1938 and 1939, as well records were not kept, because curtailment was on property or lease basis; figures here shown are estimates based on percentages applying since June 1, 1939, when new curtailment program was adopted.

‡ Data for Louisiana embrace all producing wells other than stripper wells of North Louisiana, as all except stripper wells are given allowables, although some of the wells actually are not restricted, due to inability to produce maximum allowable calculated under depth formula; separation of wells which can and which can not produce their top allowables for their depths not available.

§ All averages are weighted on basis of production volumes involved.



Field flow line from each of the 12 wells comes into this dual block valve trap header system. With this set-up, any two wells may be placed on separate gauge at any time without interrupting flow of the other 10 wells.

New Ideas Feature Efficient and *Flexible Gathering System*

By GILBERT M. WILSON, Staff Writer

AN efficient, smoothly operating oil- and gas-gathering system is the result of a well-engineered plan of lease layout developed by the engineers of a company operating in the new Coalinga Nose field in California. Outstanding among the points of interest in the lease gathering system are:

1. Three stages of separation before the oil reaches the large lease tanks. Individual well gauging is accomplished in weigh-meters in the second stage of separation, making unnecessary the use of small lease gauge tanks.

2. Complete stabilization of the oil in the tanks, which results in the elimination of gas wastage, and a marked absence of turbulence of the fluid in the tanks.

3. Efficient use of two small and one large compressor to boost the gas taken off at the second and third stages of separation, up to the pressure of the initial or high-pressure stage, thus making for simplified disposal into the field gathering line of the utility company.

4. A number of smaller, but very interesting operating ideas that contribute greatly to the ease and efficiency of operation of the wells and the gathering system.

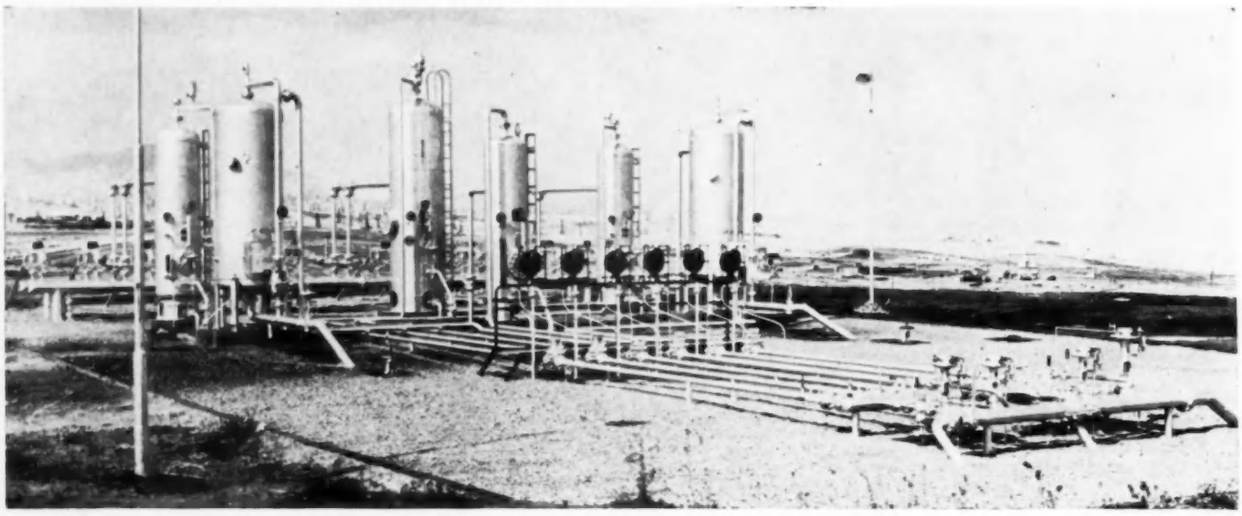
The 63 wells recently completed on the property were drilled on approximately 20-acre spacing, and total depths average 7800 feet, of which the last 450 feet is oil sand. The wells generally are good producers and show every indication of maintaining their flowing condition, at the present curtailed rate of production of slightly over 140 barrels per day, for a number of years.

The lease is divided into six sections, each served by a central trap and meter setting. Each trap setting is capable of handling up to 12 wells, although only a few settings are operating with their maximum quota of wells.

After passing through a 550-pound, then 75-pound (max. 100 pounds) stages of separation, the oil leaves the trap setting and goes to a large low-pressure trap which operates at from atmosphere to 5 pounds pressure. There are only two of these large traps which stabilize the oil to such an extent that no vapor-recovery system is required in the large tanks. No small tanks are used, the single large lease tank battery serving as both flow and shipping tanks.

An efficient gas-gathering system also is being put into operation. Two small compressors, one at each of the jumbo traps boost the low-pressure gas recovered from this third stage up to 75 pounds, and feed it into the field gathering system of the second stage, or 75-pound system. These small single stage compressors each have a capacity of 550 thousand cubic feet per day.

All gas from the 75-pound sec-



Each 12-well trap setting has three high-pressure, and three low-pressure traps. Bank of orifice meters in foreground records gas volume for each trap. Center pair of traps handles 10 wells, while single wells are handled and gauged in each of the two outside pairs of traps.

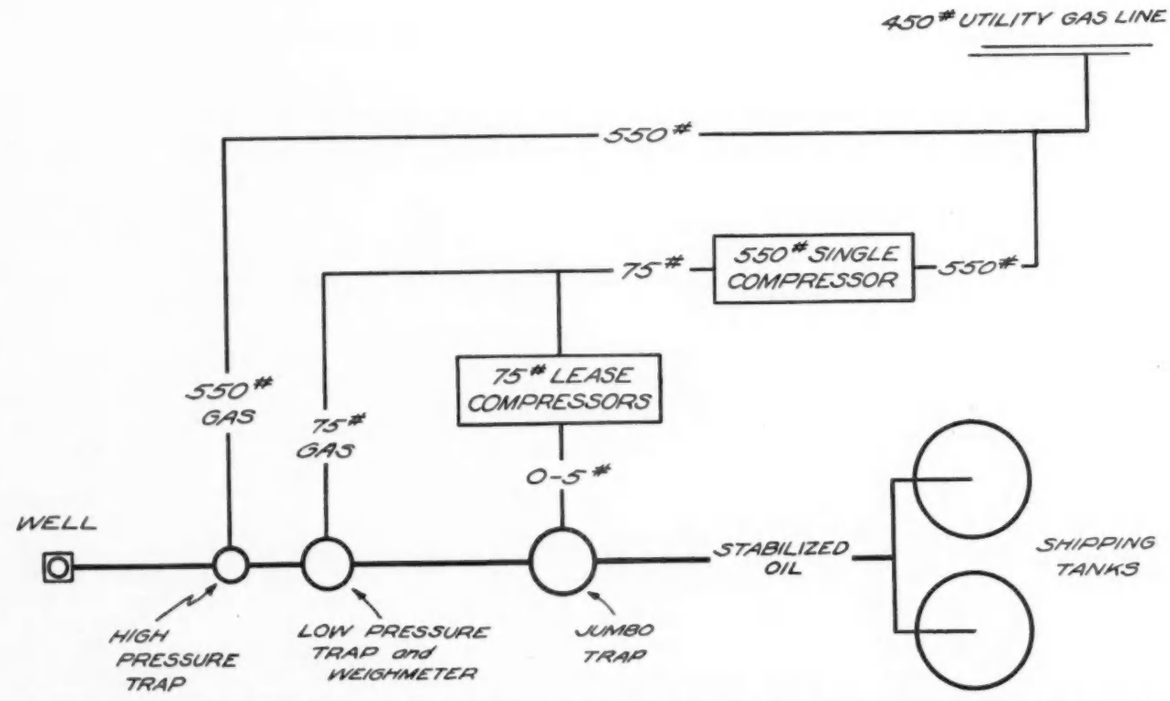
ondary stage of separation, feeds into a single large two-stage, 2½ million cubic feet per day capacity compressor that builds it on up to 550 pounds. The gas at this pressure, is forced into the field collecting system of the primary, or initial stage of separation. This high-pressure-gas line then connects into a utility company's 450-pound field gathering line.

Unitized Headers at Wells

For convenience of the field men, along with efficiency of operation, an interesting departure was made in designing the unitized flow-header and pressure-gauge assembly on each well.

The flow header consists of an 11-foot length of 9-inch heavy casing, welded closed at each end to withstand the maximum anticipated flow pressure. Flow lines from both sides of the Christmas tree are hooked up to the back side of this chamber, and the lead line going up to the trap setting takes off from either end. Two steel legs welded to the bottom of the header are cut out short sections of I-beam material, and provide a sturdy base to minimize vibrations.

Mounted on steel supports weld-



Diagrammatic sketch showing relationship of well with respect to the three stages of separation, direct route of stabilized oil to large lease tanks, and location of lease compressors which build second and third stages of separation gas up to the pressure of the initial separation stage for disposal into the utility line.

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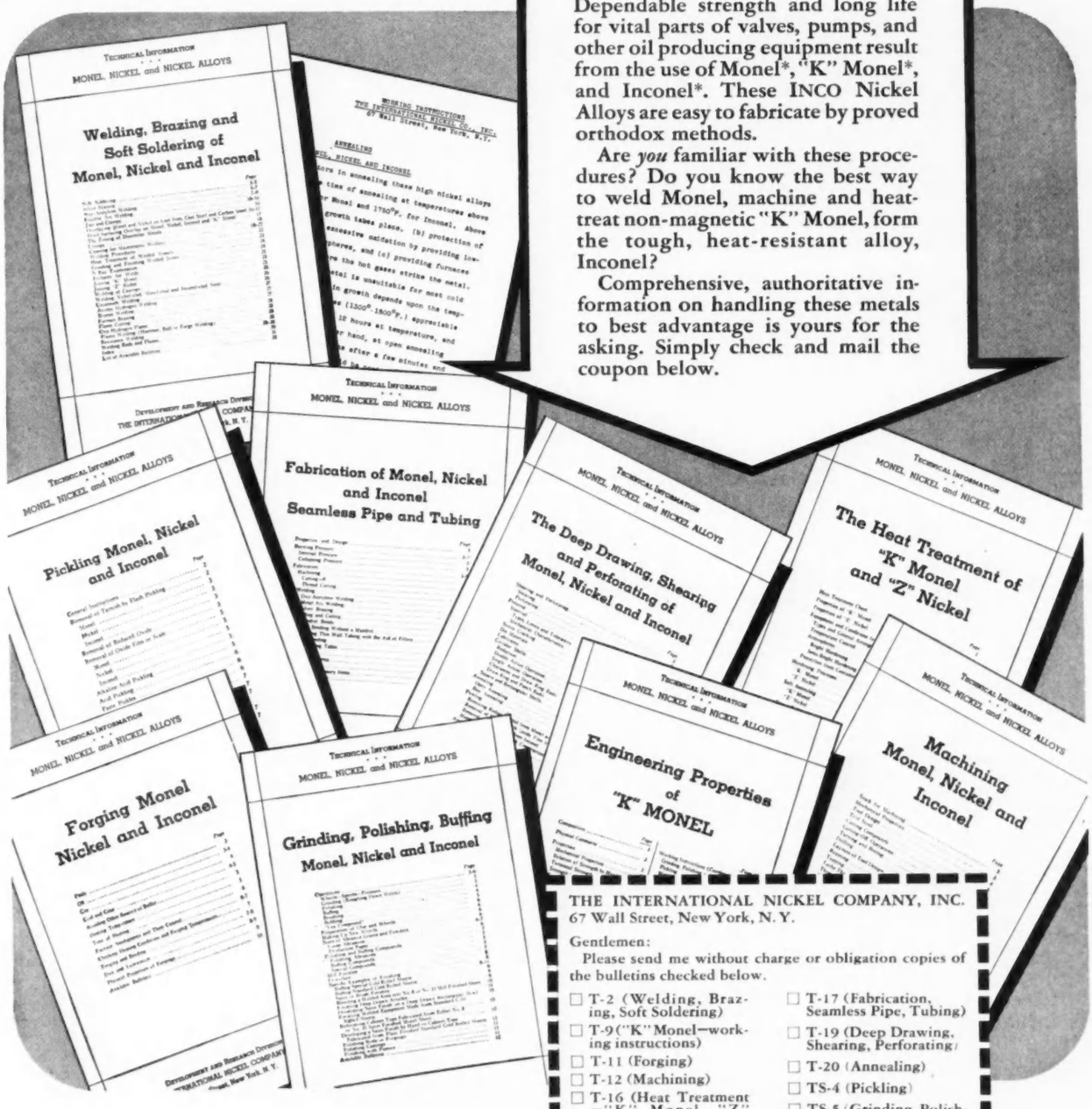
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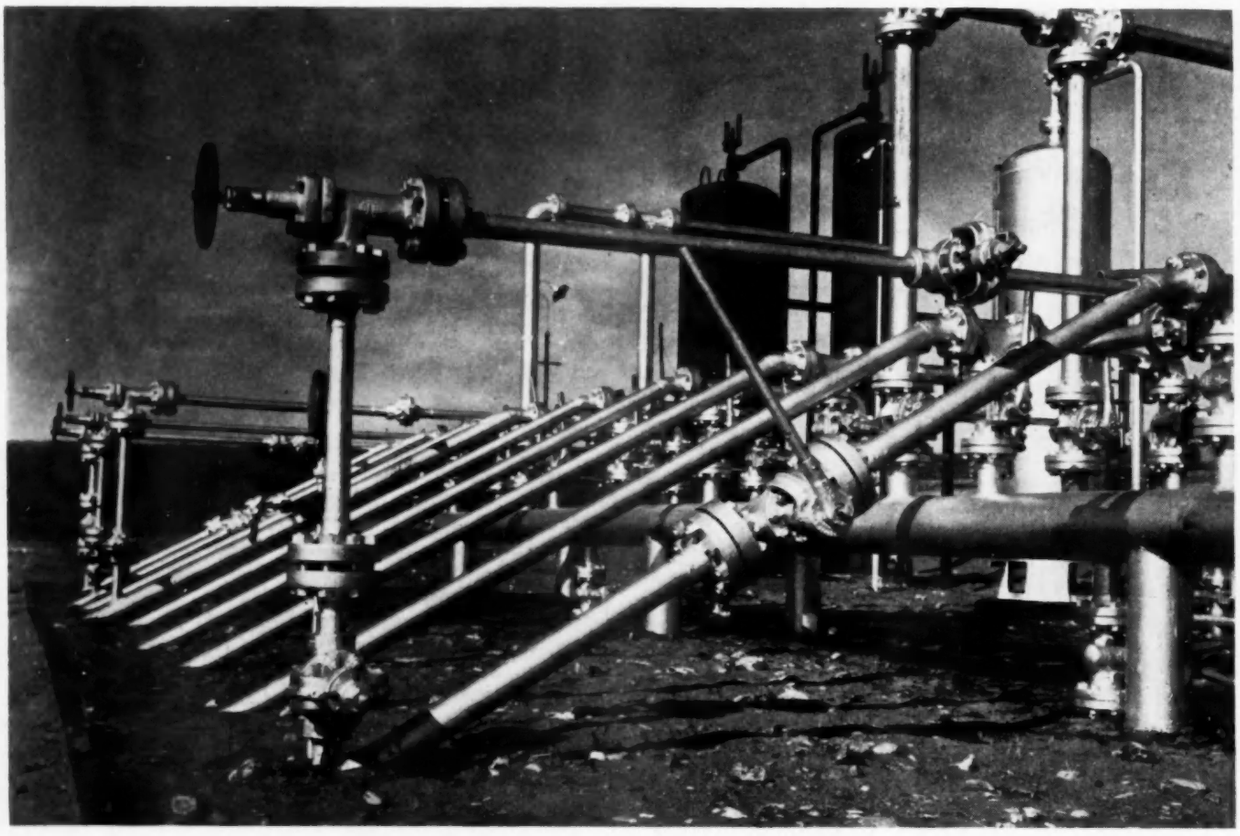

To prevent surging in certain lead lines traversing rough terrain, two flow beans are used, one at well, and extra one at point just ahead of flow header at trap setting.

ed to, and extending upward approximately 1 foot above the top of the flow header, is another smaller and somewhat shorter chamber. This chamber, made of 6⅝-inch casing, is 5 feet long, and is divided into four equal compartments, which were made by welding steel plates between cut-out sections of the pipe. Each section is a separate receiving chamber for pressure taken off from, (1) tubing or flow string, indicating oil or gas pressure in the lead line on the down-stream side of the flow bean; (2) between the water and surface strings of casing, which, although under all normal conditions should be zero, nevertheless must be constantly checked; (3) the inner casing string; and (4) tubing head, recording the tubing pressure (flowing or static) on the upstream side of the flow bean.

Pressure enters the compartments through a ¼-inch collar welded into the back side of each chamber. Half-inch collars, nipples, and tees on the top provide an outlet for pressure gauges, as well as for a recording meter. The latter is mounted at eye-level height on an upright piece of 2-inch pipe screwed into a fitting that is welded to the front of the flow header chamber. A ¼-inch outlet and bar-stock valve below each compartment allows fluid to be drained out into a common waste-gathering ¼-inch line, which then extends on over to a hole cut into the wooden cellar floor.

The several ¼-inch lines coming out to this unitized manifold from the Christmas tree outlets are neatly bound together with flat metal clips and are brought over as a single unit alongside one of the flow lines. The fluid flow-line pressure chamber is connected by a short jumper line directly into the flow-header chamber below.

The entire header and pressure-control assembly is equipped, so far as possible or practical, with unions and valves, making it possible to dismantle the equipment in comparatively large units, in the event the well is to be worked on.

Mast Erected Over Each Well

For easy handling of the tackle used in connection with running the depth-pressure bomb, a sturdy A-frame is set up over the Christmas tree of each well. The two legs of the framework, made from tubing, are joined together at the top with a steel gusset. Four guy wires stretched between steel ears on the top of the frame and the four corner posts of the fence surrounding the well location gives ample strength to the structure. A ladder made from sucker rod material, is welded to one of the legs to permit a man to assemble the rope tackle and rigging on the mast above the well. No derricks were left on the wells following their completion.

Six Trap Settings

The six trap settings located at advantageous points throughout the field are examples of efficiency of operation, and in obtaining the maximum range of service from a minimum amount of equipment.

A typical 12-well-capacity trap setting consists of three high-pressure, 550-pound maximum, and three low-pressure, 100-pound maximum separators, with the latter operating at around 75 pounds. Two of these low-pressure traps are of the combination trap and enclosed weigh-meter type which permit the production from any two wells to be accurately gauged

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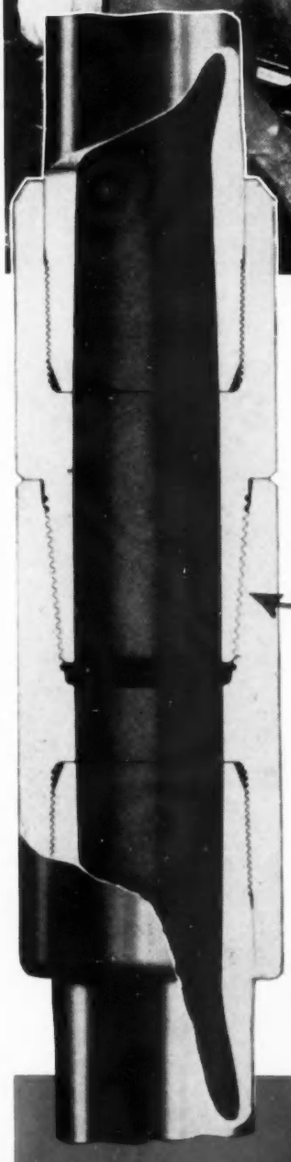

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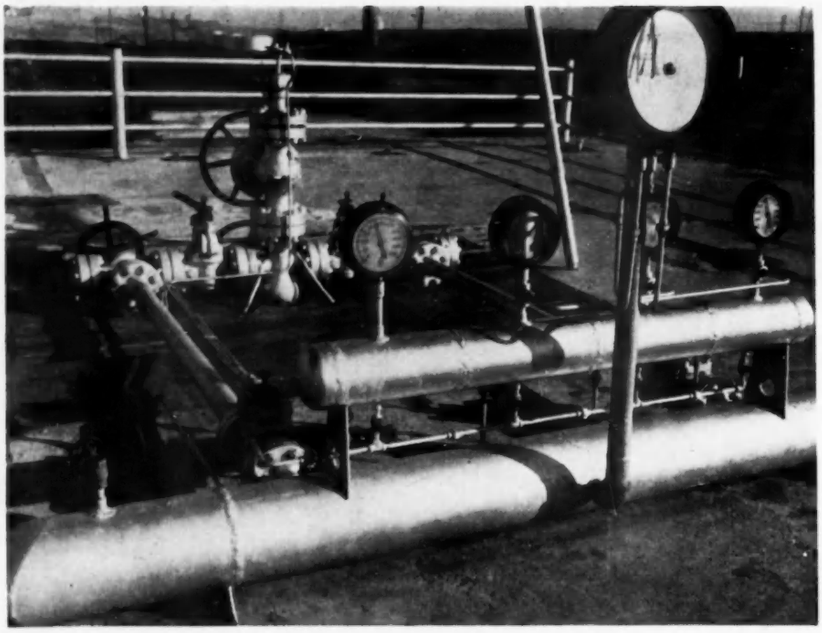


Typical flow header on wells. Lower chamber is header for well production, and the upper is the multi-chambered receiver for all pressures needed at the well. Fitting welded to front of lower chamber provides support for eye-level recording meter.

independently of the other wells. A counting device mounted on the outside of the separator shell records the number of dumps made during any given period.

Dual Flow Headers at Trap Setting

Oil and gas from each well, coming through individual flow lines, first enters a header on the upstream side of the traps. This header consists of two horizontal, 40-foot lengths of 10¾-inch heavy casing welded closed at each end and supported on short pipe stilts. The header nearer the separators is divided into two sections to enable production from either of the two wells that are being gauged separately, to be shunted directly into the two pairs of traps which are intended for that purpose.

The header is neatly laid out, with the 3-inch field lines rising out of the ground at a 30-degree angle, and coming into a dual block valve system, that permits flexible selective handling of the production from any well. Each header is directly connected by an overhead 4-inch line to each of the three high-pressure separators.

Double Flow Beans Cut Surging

Several of the trap settings serve wells located in rougher territory than the others, and therefore require certain special provisions for reducing the amount of heading or surging in the field lead lines between the well and the traps. Two flow beans are employed in the flow line of such wells, one on the well Christmas tree, and the other just ahead of the flow header at the trap setting. Flow is partly beaned at the well and finally controlled with the second bean at the trap.

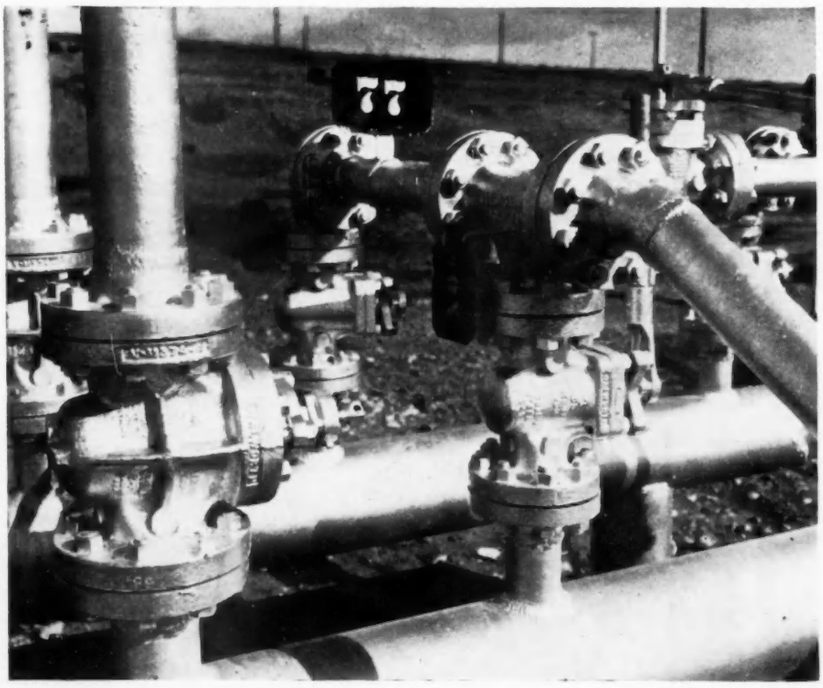
Identification Tags on Gates

Operation of the 24 or more gates in the header, in periodically switching the wells into the desired separators, is made virtually fool-proof through use of identification tags on each gate, indicating whether or not a particular well is on special gauge. On the body of each gate, or the fitting immediately above it, is welded a short steel rod, fashioned into a hook. A light steel tag, painted black, and stencilled with the word "ON" on the one side, and "OFF" on the other, is hung on each hook. In addition, a similar tag bearing the well number is clamped to the cross-over line between the two gates belonging to that well.

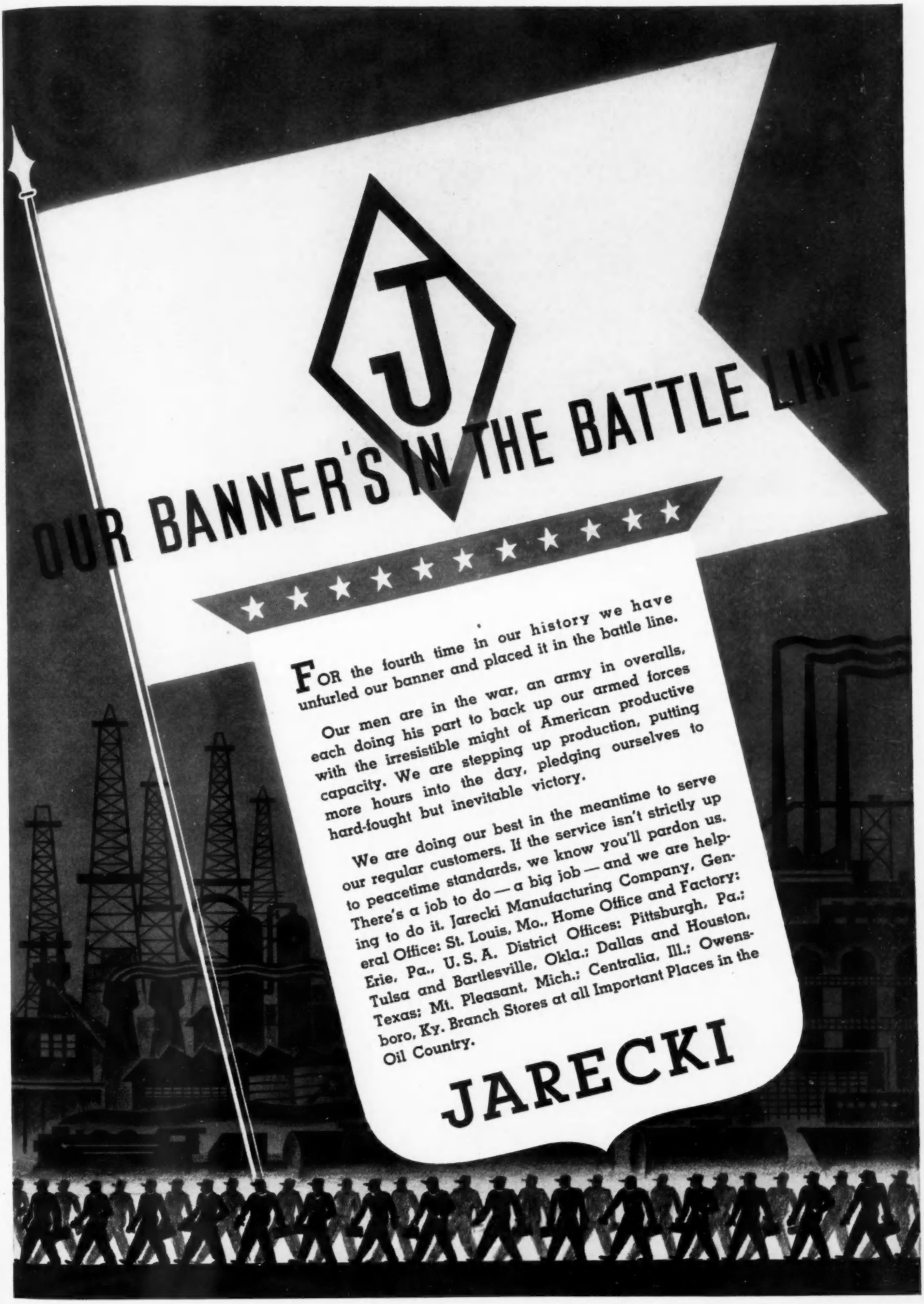
The well number tags, while entailing more work in making them up, prove to be well worth while, since numbers painted on the line or valve itself soon become obliterated or scraped off, increasing the chance of making an error in switching wells. Through the use of this numbering and classification system, the production foreman, or a pumper strange to that particular section of the field, can tell at a glance the existing conditions of the wells flowing into that trap setting.

Weigh-Meters Gauge Production

Routine operating procedure on the lease calls for two wells to be



Steel identification tags, denoting well number and flow condition, simplify operation of trap flow headers.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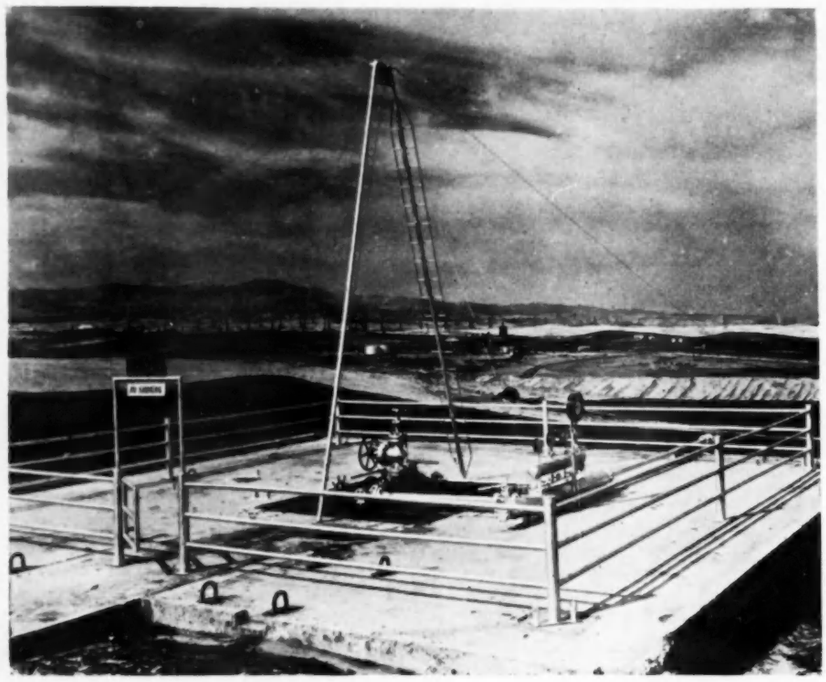


An A-frame mast erected over each well facilitates running of pressure bomb. Note simplicity of neat well header and fencing surrounding location.

on gauge at all times, and the weigh-meter readings for these wells are usually taken once every 8-hour tour. Any well may be turned into either of the two gauging circuits, and left there as long as necessary. Under normal conditions, the wells are placed on gauge at regular intervals, usually in rotation order, to keep an up-to-date check on the performance of every well. When the two wells are on gauge, production from the remaining 10 wells is run together through the larger-capacity high-pressure and low-pressure traps in the center of the trap setting.

No small tanks are used for gauging the oil, as the production is metered with sufficient accuracy in the weigh-meter traps. Using the final shipping tank gauges as a control figure, the meters have been shown to be accurate to within an extremely small percentage of the final shipping figure.

Liberated gas from each of the six separators on the trap setting is individually metered in a neatly arranged bank of orifice meters mounted above the six lines a short distance from the low-pressure traps. A steel grating walk-way spans the lead lines immediately in front of the meters to facilitate collecting and changing the meter charts. This metering arrangement makes it possible to ascertain at any time the amount of gas coming off both the high- and low-pressure stages of each of the two wells on separate gauge, as well as the high and low stages of the collective remaining 10 wells.

After being metered, the gas from the three high-pressure, and the three low-pressure lines passes through pilot-type back-pressure regulators and on out into their respective field gathering system lines.

Jumbo Traps Stabilize Oil in Shipping Tanks

Following its discharge from the low-pressure-weigh-meter separators, the oil, and what gas still remains with it at the 75-pound release pressure, goes over to one of the large jumbo traps, of which there are two in the field. This separator operates at from five pounds to atmosphere, and has ample capacity for the curtailed, combined production from the 31 or 32 wells which it handles. These two large traps are as nearly centralized as possible in relation to the wells and the trap settings.

So little gas remains in solution in the oil after passing through this trap that it is unnecessary to provide vapor-recovery systems at the large tank battery. Practically no vapors are given off in the tanks, and the oil remains quiet. This latter point, concerning the condition of the oil, has certain advantages which make it particularly desirable in this type of gathering system. Chief among these is that a maximum amount of B.S. and water will drop out and fall to the bottom of the tank between shipping periods, and emulsion will not be so likely to form with no turbulence in the oil.

Compressors in Gas Gathering System

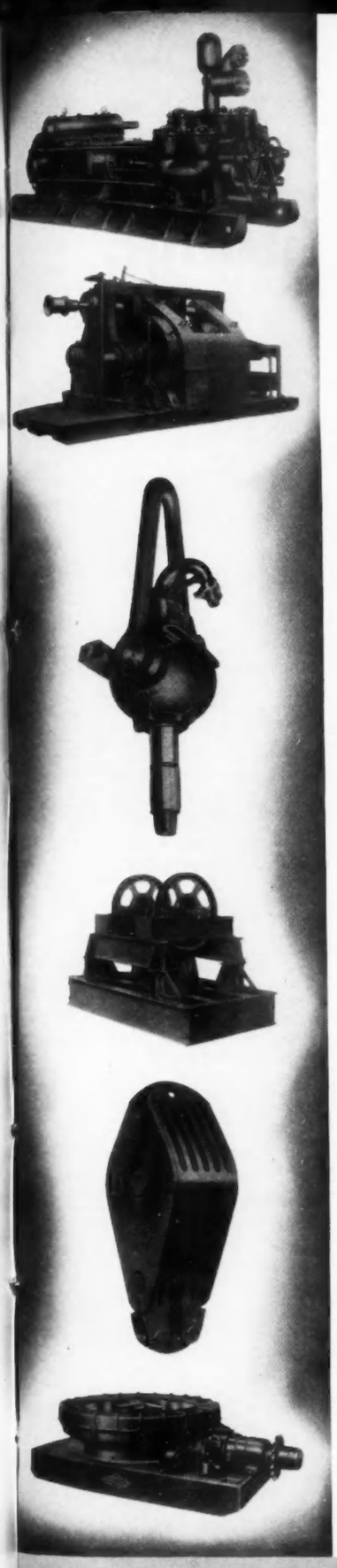
Along with each of the two jumbo traps on the lease, a small, single-stage 550 thousand cubic feet per day compressor is being installed at the time of this writing. These two compressors take the gas that comes off the jumbo traps, and build it up to 75 pounds pressure, following which it is fed into the low-pressure gathering line system coming off of each of the six field trap settings.

A single high-pressure, high-volume compressor likewise is being installed at a convenient point in the field. This two-stage compressor has a capacity of 2½ million cubic feet per day. All 75-pound gas in the field is taken in here and boosted up to the 550-pound pressure of the initial separation stage. All 550-pound gas is fed into a common line which feeds into the utility company's 450-pound carrier running through the field.

Only two tank settings are in use on the lease, neither of which having tanks of less than 5000 barrels capacity. One setting has three 10,000-barrel and three 5000-barrel tanks; the other has three 10,000-barrel tanks.

Throughout all installations on the lease, disregarding for the moment the streamlined and desirable features of the production gathering system as a whole, judicious use was made of all equipment and materials. One of the principal goals of the men responsible for the design and installation, was to make every field operation as simple and as fool proof as possible for the field man, yet retaining the desired element of flexibility of set-up, and which permits the use of a minimum amount of equipment for a maximum range of field services.

Unitization of the flow-header and pressure gauge assembly on the well, the flow-header system at the trap setting, and elimination of gauge tanks through the use of combination weigh-meters and traps, has brought about a definite economy of operations for the 63 flowing wells on the lease.



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School of Chemical Engineering, University of Oklahoma

Part 1—Introduction and Experimental Work

DESPITE the extensive research which has been carried out during the past few years on the problems of gas reserves and future production rates of gas wells, there is little information available for the production characteristics of a hydrocarbon which is produced as a vapor from a reservoir containing its own liquid. There is, however, necessity for such information as the production characteristics of the butane and propane reservoirs, since the storage of butane or propane fractions in depleted gas wells is becoming common practice for present-day natural gasoline manufacturers.

An artificial reservoir, composed of ninety-three and a half feet of a two-inch A.P.I. pipe, mounted vertically and packed with unconsolidated Wilcox sand, was used to investigate the production characteristics of butane and propane reservoirs. The curve for production rate decline of a reservoir of this type was found to be similar to that for the usual gas reservoir. The cumulative production is related to the cumulative time by an exponential function relation. The production rate equation developed for ordinary gas reservoirs was modified and the modified form was found to be applicable. For butane and propane reservoirs, it is quite possible, therefore, from the known production data, to estimate the future cumulative production and future production rates by means of these empirical relationships.

PETROLEUM reservoirs are usually classified as gas or oil according to the gas/oil ratio which may prevail during the producing period. The fluids from these reservoirs are described as gas or oil when they appear at the surface, and it seems unnecessary to distinguish between the phases in which the fluids may exist in the reservoir. However, there seems to be little doubt that some change in phase should occur to them with a change from the conditions in the reservoir to those at the surface or vice versa. The purpose of this work is to study the production characteristics of hydrocarbons which exist as a liquid under reservoir conditions and are produced as a gas.

It is common practice for present-day oil producers and natural gasoline manufacturers to store their excess butane and propane fractions in depleted gas reservoirs. Despite the extensive research that has been carried out during the past few years on the problems involved in calculating gas reserves and future production rates of gas reservoirs, available information on the production characteristics of such butane or propane reservoirs is still unfortunately meager. It was hoped, therefore, in conducting this investigation, that some information could be obtained and empirical equations derived which might be advantageously made use of in field applications.

The problem looks at first quite simple in comparison with the calculations of crude-oil reserves or gas reserves. But there are so many variations in actual practice that it would be practically impossible to conduct an investigation, the results of which could be made applicable to all conditions of production. This lack of uniformity in practical conditions precludes generalization at any rate, so this investigation has been undertaken under such conditions as are experimentally possible yet not incomparable to field practice. Therefore the experiments have been carried out under the following limited conditions:

(1) Approximately constant temperature,
(2) Uniform permeability, and
(3) One dimensional flow.

* This series of three papers is abstracted from a thesis submitted by Ju (Home address, Chungking, China) in partial fulfillment of the Master of Science Degree in Chemical Engineering at the University of Oklahoma, August, 1941. Present address, Universal Trading Corporation, New York City, N. Y.

Theoretical Considerations

The actual situation in a reservoir of this type which is produced by one or more wells usually represents a two or three dimensional unsteady flow of gas. The liquid is stationary, but the interface between the liquid and the vapor recedes as the former vaporizes. Therefore the resistance met by the flow of the gas changes continuously so long as there is any liquid present. Apparently the general equations which have been developed for gas wells would hardly be suitable, without modification, for calculations in connection with such a reservoir.

It has been shown[3] that the density δ of a gas flowing in a homogeneous porous medium obeys the fundamental differential equation,

$$\nabla^2 \delta^{\frac{1+m}{m}} = \frac{(1+m)\,\mu f\, \delta_o^{\frac{1}{m}}}{k} \frac{\partial \delta}{\partial T}, \qquad (1)$$

where the equation of state of the gas has been defined by

$$\delta = \delta_o P^m, \qquad (2)$$

μ is the viscosity of the gas, f and k, porosity and

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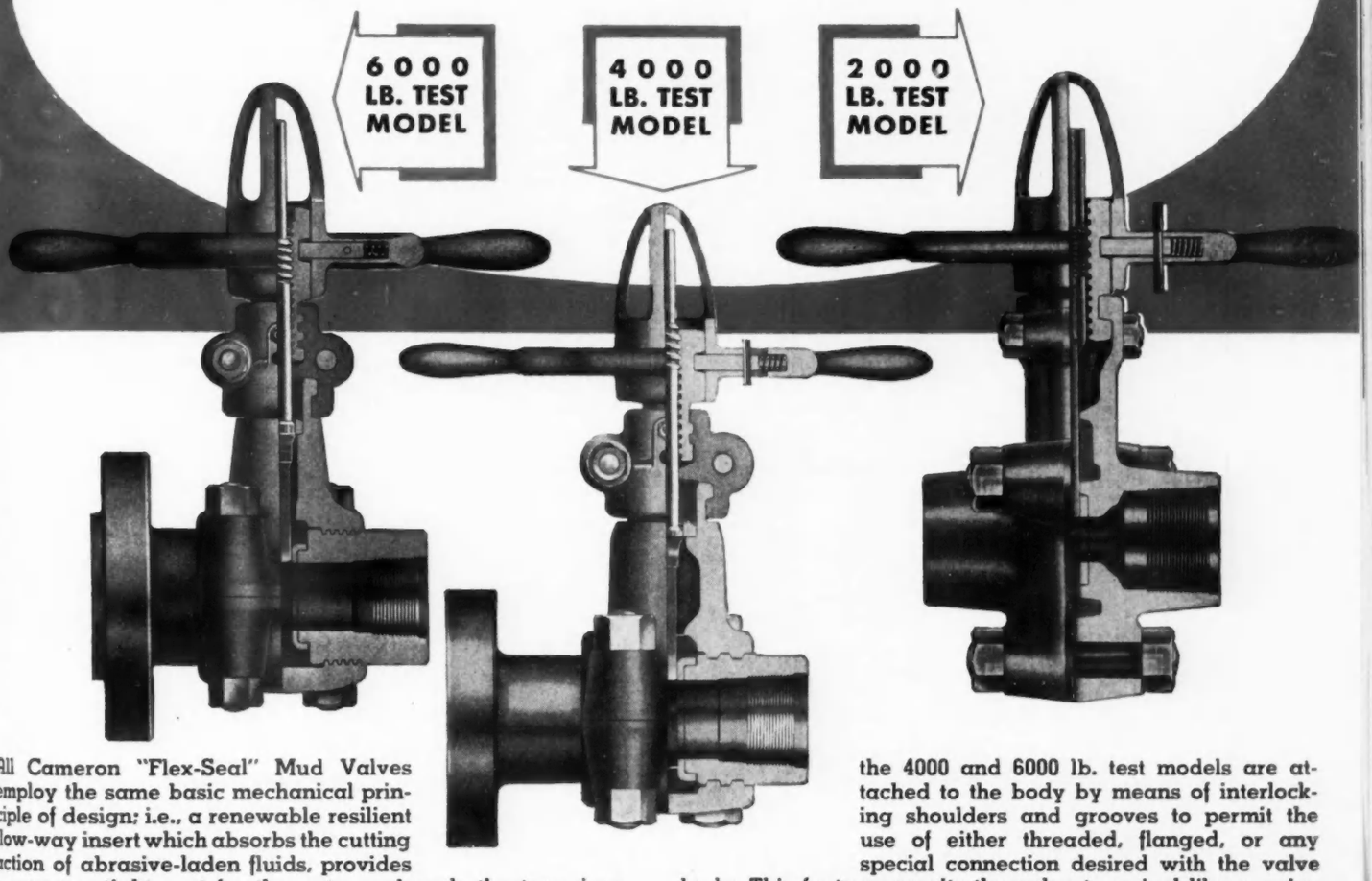

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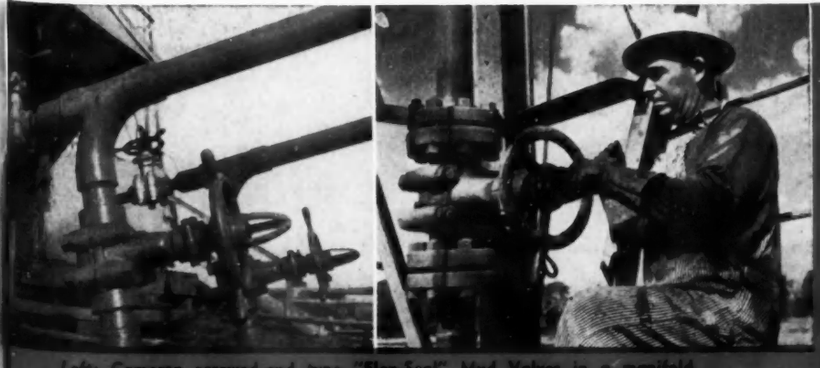

Left: Cameron screwed-end type "Flex-Seal" Mud Valves in a manifold.
Right: A Cameron flanged-end type "Flex-Seal" Mud Valve on a standpipe.

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permeability of the medium respectively, T, time, P, pressure, and δ_o, a proportionality constant, specific for different gases. The exponent m determines the thermodynamic character of the expansion of the gas as it moves from the high to lower pressure regions; in the particular case of isothermal expansion, m is equal to unity. Therefore in combining equations (1) and (2) for isothermal conditions, the following equation can be obtained,

$$\nabla^2 P^2 = \frac{2f\mu}{k} \frac{\partial P}{\partial T} \quad (3)$$

Equation (3) governs both the steady and unsteady flow of gas in a homogeneous porous medium. However, this is a second order, non-linear differential equation, for which a general mathematical solution is not known. Consequently, it is necessary to employ some approximate method of analysis.

An empirical equation has been developed by Pierce and Rawlins[6] which has been demonstrated by Rawlins and Schellhardt[7] to be applicable to gas wells. It is as follows,

$$\frac{Q}{T} = C(P_f^2 - P_s^2)^n , \quad (4)$$

where $\frac{Q}{T}$ is the rate of flow, P_f, shut-in formation pressure or average pressure, P_s, back pressure at the sand face, and C and n are constants determined by experiments. The following remarks have been made:[7]

"1. The relationship between the rate of flow and the pressure factor is applicable regardless of the actual values of the pressures—the difference of squares of the pressures is the controlling factor.

"2. The shape and size of the sand grain has an appreciable effect on coefficient C and exponent n of the flow equation.

"3. The distance of travel of the gas and diameter of the flow tubes influence only coefficient C of the flow equation.

"4. For all practical purposes, the porosity of the packed porous media affected only coefficient C of the flow equation."

Equation (4), though empirical in nature, is comparable with the equation of flow derived by Muskat and Botset[4] for radial flow,

$$\frac{Q}{T} = \frac{2\pi hk\delta_o (P_f^{1+m} - P_s^{1+m})}{(1+m)\mu \ln r_f/r_s} , \quad (5)$$

where h is sand thickness, r_f and r_s are radius of reservoir and well, respectively. Let $n = 1$, $m = 1$, and $C = \frac{2\pi hk\delta_o}{(1+m)\mu \ln r_f/r_s}$, then Equations (4) and (5) become identical.

Equation (4) assumes steady flow which is only approximately true for a gas reservoir, as there is no reservoir in which gas flows under strictly steady conditions. However, for the flow characteristics of a hydrocarbon vapor from a reservoir evolved from its own liquid, the situation seems to be more or less steady since the vapor pressure represents a constant value based on the assumption that the reservoir is kept isothermal and that there is no exhaustion of liquid. Still, as the liquid surface recedes, the resistance to the flow of gas increases so equation (4) must be modified in order to fit the conditions represented by the present investigation.

According to the remarks made by Rawlins and Schellhardt[7] that the distance of

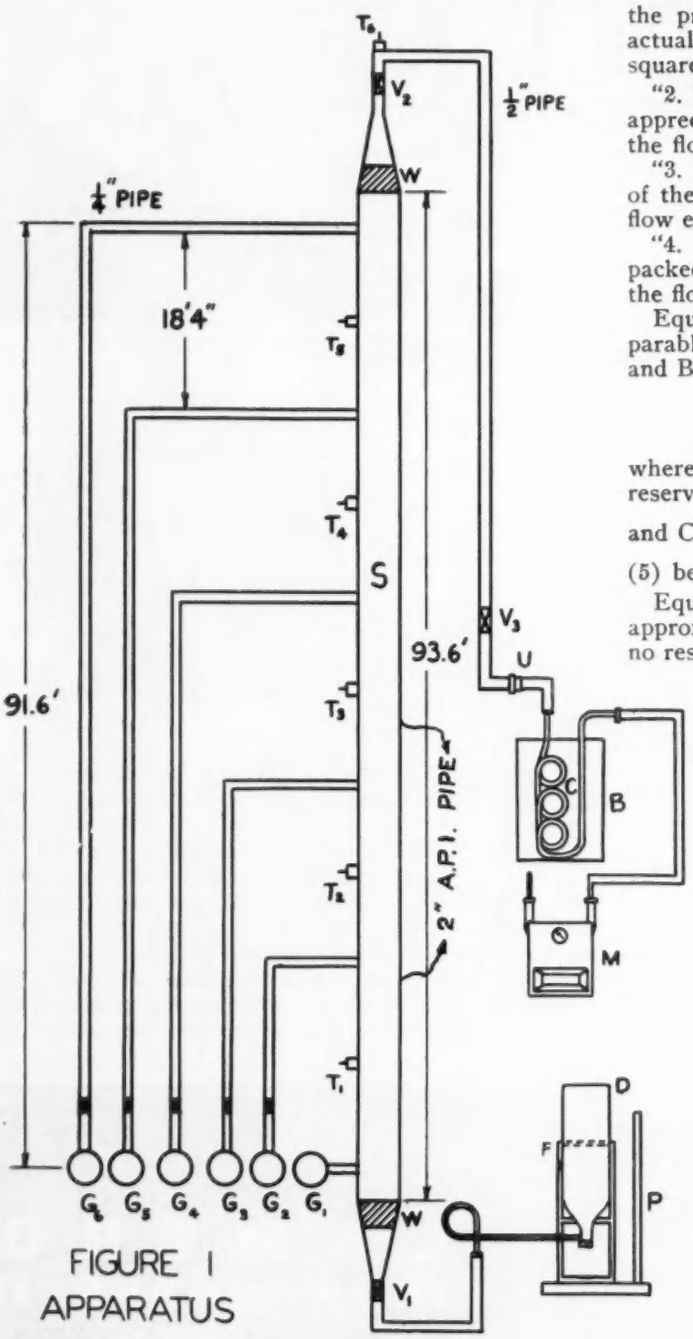

FIGURE 1
APPARATUS

B—Constant Temperature Bath
C—Copper Coil
D—Butane or Propane Drum
F—Wooden Frame
G—Pressure Gages
M—Gas Meter
P—Platform Scale
S—Sand Space
T—Thermocouples
U—Union
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W—Glass Wool Plug

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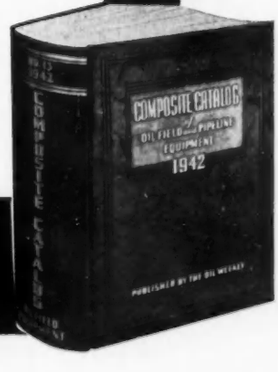

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travel of the gas influences only the coefficient C in equation (4), it is reasonable to assume that the rate equation may be expressed as

$$\frac{\Delta Q_p}{\Delta T} = \frac{C}{(Q_o + Q_v)^{\alpha}} \cdot (P_f^2 - P_s^2)^n , \qquad (6)$$

where $\frac{\Delta Q_p}{\Delta T}$ is the rate of production, Q_v is the quantity of liquid vaporized, Q_o is the vapor space in the reservoir when $T = O$, and α is an empirical constant. Or, if $\alpha = n$, then the equation becomes

$$\frac{\Delta Q_p}{\Delta T} = C\left[\frac{(P_f^2 - P_s^2)}{Q_o + Q_v}\right]^n . \qquad (7)$$

The verification of equation (7) is one of the objects of this investigation. It may be found useful in calculating the future production rate of butane or propane reservoirs.

TABLE 1

Run No. 1—Propane. Pressure and Production Data Data for Figures 2 and 4 (Part II)

Barometric reading = 28.85 inches mercury = 14.2 lbs. per sq. in.

Temperature = 92° F.

Valve setting = 3/16 turn.

Time, T, in Minutes	Pressure, P, in Lbs., per Sq. In. Absolute						Quantity, Q_p, Cu. Ft., at 92° F., 14.2 Lbs., per Sq. In.
	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	
0	188.2	184.7	180.7	176.7	173.2	169.2	0
5	188.2	184.7	180.7	176.7	169.2	140.2	23.58
10	188.2	184.7	180.7	174.2	161.2	118.2	39.77
15	188.2	184.7	180.7	171.2	147.2	108.2	55.05
20	188.2	184.7	180.2	168.2	133.2	95.2	68.50
25	187.2	184.2	179.2	163.2	123.2	80.2	79.88
30	187.2	183.2	178.2	156.7	114.2	73.2	89.96
35	187.2	182.2	176.2	148.2	107.2	65.2	98.92
40	187.2	182.2	175.2	139.2	100.2	60.2	107.53
45	187.2	180.2	171.7	136.2	95.7	58.2	115.33
50	186.2	179.2	167.7	133.2	92.2	56.2	122.79
55	185.2	177.7	163.2	129.7	89.7	54.2	130.00
60	184.2	176.2	159.7	126.2	87.2	51.2	136.40
65	183.2	174.2	155.2	123.2	86.2	48.2	142.86
70	181.2	172.2	150.2	120.2	84.2	46.2	148.71
75	179.2	169.2	147.2	116.2	81.2	45.2	154.49
80	177.2	165.7	143.2	113.2	79.2	43.2	160.06
85	174.7	161.2	139.2	110.7	77.2	42.2	165.39
90	171.2	156.7	135.2	107.2	75.2	41.2	170.51
95	166.7	150.2	130.2	102.2	69.2	36.2	175.46
100	160.2	146.2	125.2	99.2	67.2	34.2	180.12
110	132.2	119.2	101.2	80.2	54.2	26.2	187.93
120	62.2	58.2	52.2	42.7	30.2	16.2	192.22
130	39.2	36.2	32.2	27.2	21.2	14.7	193.29
140	31.2	29.2	25.2	22.2	18.2	14.2	193.71
150	25.2	24.2	21.2	19.2	17.2	14.2	193.94
160	23.2	21.2	19.2	17.2	16.2	14.2	194.07
170	20.2	18.7	17.2	16.2	15.2	14.2	194.16
180	18.7	17.2	16.2	15.7	14.7	14.2	194.21
190	17.7	16.7	15.7	15.2	14.2	14.2	194.24
200	16.2	15.7	15.2	14.7	14.2	14.2	194.27

TABLE 2

Run No. 2—Propane. Pressure and Production Data

Barometric reading = 29.08 inches mercury = 14.2 lbs. per sq. in.

Temperature = 87° F.

Valve setting = ¼ turn.

Time, T, in Minutes	Pressure, P, in Lbs., per Sq. In. Absolute						Quantity, Q_p, Cu. Ft., at 87° F., 14.2 Lbs., per Sq. In.
	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	
0	177.7	173.7	169.7	165.7	162.2	158.2	0
5	177.7	173.7	169.7	165.7	158.2	130.2	29.81
10	177.7	173.7	169.7	165.2	144.2	101.2	48.53
15	177.7	173.7	169.7	164.2	136.2	83.7	63.21
20	177.7	173.7	169.2	160.2	128.2	72.2	76.11
25	177.7	173.7	168.2	158.2	120.2	62.7	87.21
30	177.7	172.7	166.2	155.2	112.2	55.2	96.80
35	177.2	171.7	164.2	152.2	103.2	51.7	105.38
40	176.2	170.7	160.2	148.2	96.2	47.2	112.89
45	175.2	169.7	158.2	146.2	90.2	43.7	119.90
50	174.2	168.7	156.2	142.2	87.2	43.2	126.82
55	173.2	166.7	154.2	136.2	83.2	43.2	133.16
60	172.2	164.2	152.2	132.2	80.2	41.2	139.51
65	170.2	163.2	148.2	127.2	76.2	39.2	144.67
70	168.2	162.2	144.2	122.2	72.2	37.2	150.33
75	166.7	161.2	140.2	114.2	69.2	34.2	155.02
80	165.2	160.2	136.2	108.2	66.2	33.2	160.12
85	163.2	158.2	132.2	105.2	62.2	31.2	164.46
90	161.2	156.2	128.2	100.2	58.2	30.2	169.44
95	159.2	152.2	124.2	94.2	55.2	28.2	173.55
100	158.2	150.2	120.2	90.2	52.2	26.2	177.96
110	157.2	136.2	110.2	80.2	47.2	22.2	185.02
120	115.2	100.2	88.2	66.2	40.2	19.2	190.36
130	53.7	54.2	48.7	44.2	26.2	15.7	193.61
140	38.7	34.2	32.2	26.2	22.2	14.7	194.61
150	34.7	30.2	28.2	24.2	21.2	14.2	195.02
160	30.2	27.2	26.2	23.2	19.2	14.2	195.25
170	26.2	25.2	23.2	21.2	18.2	14.2	195.40
180	23.2	21.2	20.2	18.2	17.2	14.2	195.49
190	20.2	19.2	18.2	17.2	16.2	14.2	195.53
200	18.2	17.7	16.2	16.2	15.7	14.2	195.56
210	16.2	15.7	15.2	15.2	14.7	14.2	195.58

Apparatus and Materials Used

Apparatus: The apparatus used for this investigation is shown diagrammatically in Figure 1. It consisted essentially of a vertical two-inch A.P.I. pipe (1.995 in. I.D.), 93.6 feet in height, which was equipped with six gage taps at 18 feet, 4 inches intervals, for pressure gages G_1, G_2, G_3, G_4, G_5, and G_6. The pressure taps were connected by quarter-inch pipes to the pressure gages on the ground floor. To prevent the pipes from giving erroneous results, due to their being filled with hydrocarbons whose flow characteristics were to be determined, these connecting pipes were all filled with n-heptane with a glass wool plug at the top to prevent too much mixing of the liquids.

The space S in the two-inch A.P.I. pipe was packed with unconsolidated Wilcox sand with known porosity, permeability, and screen analysis. The sand was kept in position by the glass wool plugs W at both ends of the pipe. To avoid any wall channelling phenomenon, a layer of sand was attached with shellac to the inside wall of the pipe.

The pipe was equipped with six copper-constantan thermocouples, T_1, T_2, T_3, T_4, T_5, and T_6, to show the temperatures at different positions. The thermocouples were connected to a potentiometer not shown in Figure 1.

The bottom of the pipe was connected to a valve V_1 then to a flexible connection which was in turn connected to the butane (or propane) drum D. The

TABLE 3

Run No. 3—Propane. Pressure and Production Data

Barometric reading = 28.95 inches mercury = 14.2 lbs. per sq. in.

Temperature = 70° F.

Valve setting = ⅛ turn.

Time, T, in Minutes	Pressure, P, in Lbs., per Sq. In. Absolute						Quantity, Q_p, Cu. Ft., at 70° F., 14.2 Lbs., per Sq. In.
	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	
0	130.7	126.7	124.2	124.2	124.2	124.2	0
4	130.7	126.7	123.2	103.2	72.2	40.2	9.13
8	130.7	126.7	120.2	92.2	63.2	27.2	12.77
12	130.7	125.7	114.2	89.2	59.2	25.2	15.83
16	130.7	125.2	111.2	86.2	58.2	24.2	18.67
20	129.2	124.2	109.2	85.2	57.2	24.2	21.48
24	127.2	123.7	106.2	83.2	56.2	24.2	24.07
28	125.2	121.7	104.2	81.2	54.7	23.7	26.69
32	122.2	119.2	102.2	79.2	53.2	23.2	29.32
36	120.2	116.7	99.7	77.7	52.2	23.2	31.93
40	117.2	114.2	98.2	76.2	51.2	23.2	34.31
44	115.2	112.2	96.2	75.2	50.2	22.2	36.60
56	109.2	105.2	90.7	71.7	47.2	20.2	42.50
64	106.2	101.7	87.2	70.2	45.2	20.2	46.20
72	102.2	99.2	84.2	67.7	44.2	19.2	49.63
80	99.2	96.2	82.2	66.2	43.2	18.2	52.94
88	88.2	80.2	68.2	57.2	37.2	16.2	56.00
100	51.2	48.2	45.2	37.2	26.2	15.2	59.30
110	36.2	33.2	31.2	27.7	21.2	14.2	60.21
120	27.2	25.2	23.2	20.2	16.2	14.2	60.52
130	25.2	21.2	19.2	17.2	15.2	14.2	60.68
150	20.2	18.2	17.2	15.2	14.2	14.2	60.80
170	16.2	15.2	15.2	14.7	14.2	14.2	60.86
180	14.7	14.2	14.2	14.2	14.2	14.2	60.91

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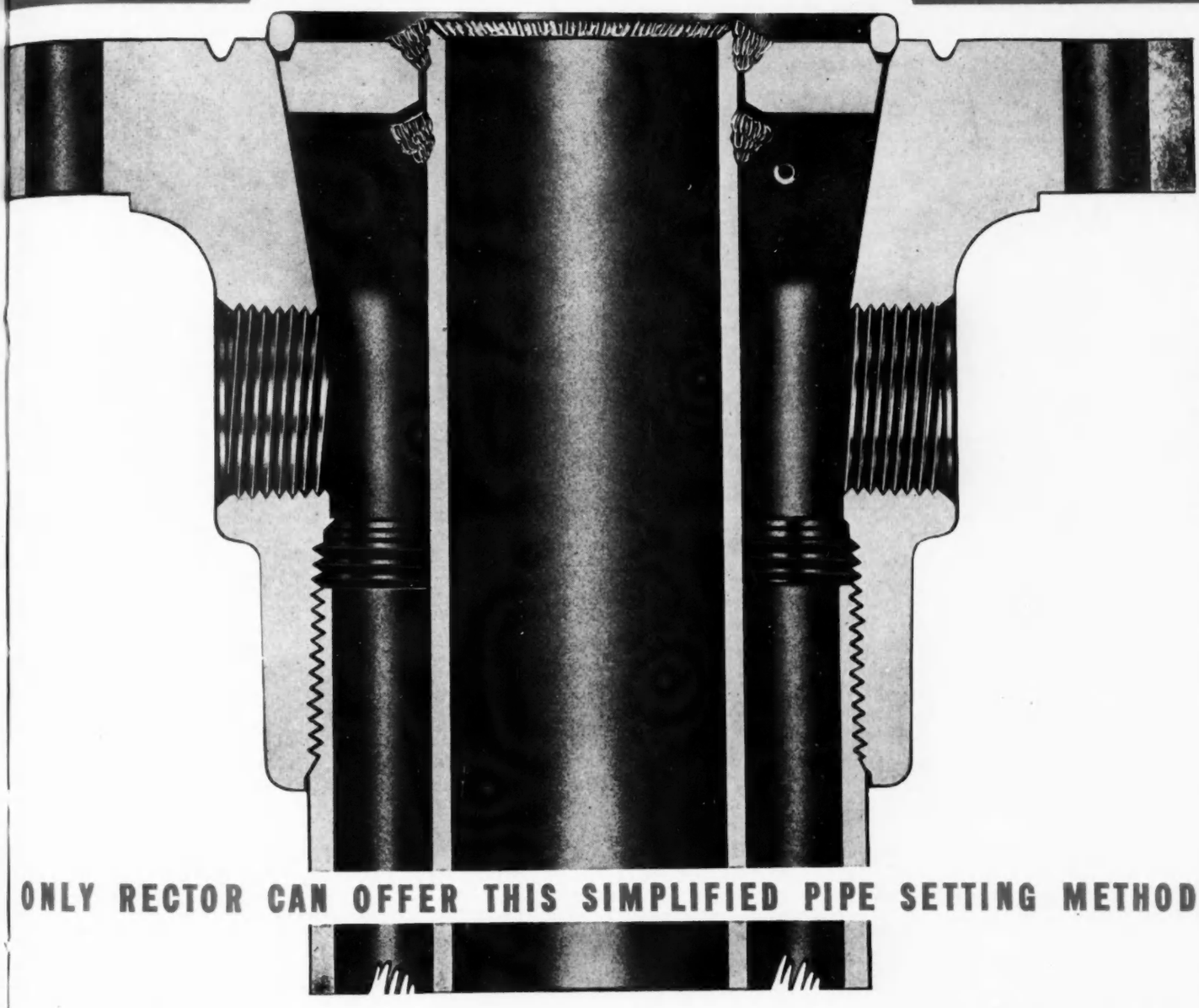

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drum D was set on a wooden frame F on a platform scale P. The top of the pipe was connected through valves V_2 and V_3 by half-inch pipes to a coil C made of a quarter-inch copper tubing and then to the gas meter M. A 50-gallon drum B was filled with water and was used as a constant temperature bath for the exit gas. The gas meter M was of the domestic type. The union U was used to disconnect the half-inch pipe from the coil when necessary.

Hydrocarbons: Butane (98 percent pure) and propane (95 percent pure) were used in these experiments in liquid form and were donated by the Phillips Petroleum Company in drums. Natural gas of the following compositions was used for the determination of porosity and permeability of the sand.

Components	Percent
Methane	97.0
Ethane	1.9
Propane	1.0
Carbon dioxide	0.1

Reservoir Sand: Unconsolidated Wilcox sand from an outcrop near Ada, Oklahoma, was used. The properties of the sand were as follows,

Screen Analysis: A screen analysis made on oven-dried sample gave the following results:

Sieve Mesh	Wt. % Retained on Screen
50	2.45
70	14.65
100	31.50
150	36.80
200	12.14
Pan	2.46

The average diameter of the sand grains calculated from the above analysis by the formula suggested by Fancher and Lewis,[1]

$$d = \sqrt[3]{\frac{\Sigma n_s d_s^3}{\Sigma n_s}}, \qquad (8)$$

was 0.0055 inch. In equation (8) d_s is the arithmetic mean of the openings in any two consecutive sieves, and n_s is the number of the grains of the diameter d_s, as found by a screen analysis.

Porosity: The porosity of the packed sand in the pipe was determined by use of low pressure natural gas. The average value of several runs was 33.4 percent.

Permeability: The permeability of the packed sand in the pipe was determined by steady-flow runs with natural gas under pressure. The average of several runs showed a value of 7.2 Darcys.

TABLE 4

Run No. 4—Butane. Pressure and Production Data Data for Figures 3 and 5 (Part II)

Barometric reading = 28.80 inches mercury = 14.2 lbs. per sq. in.

Temperature = 84° F.

Valve setting = ⅜ turn.

Time, T, in Minutes	Pressure, P, in Lbs., per Sq. In. Absolute						Quantity, Q_p, Cu. Ft., at 84° F., 14.2 Lbs., per Sq. In.
	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	
0	63.2	58.7	54.2	49.7	45.2	40.6	0
5	62.2	57.2	52.7	47.7	42.2	32.1	7.63
10	62.2	57.2	52.7	47.7	42.2	30.1	12.74
15	61.7	56.7	52.2	47.2	41.7	28.1	17.57
20	61.2	56.2	51.7	46.7	41.2	25.3	21.96
30	60.2	55.7	51.2	46.2	40.7	23.6	29.10
40	59.2	55.2	50.2	45.7	40.2	19.3	34.53
50	58.7	54.7	49.7	45.2	39.2	16.9	38.32
60	58.2	54.2	49.2	44.7	38.7	16.3	42.37
70	57.7	53.7	48.7	44.2	38.2	16.1	45.35
80	57.2	53.2	48.7	44.2	37.7	16.1	48.59
90	56.7	53.2	48.7	43.7	37.2	16.1	50.88
100	56.7	52.7	48.2	43.2	36.7	16.0	53.66
110	56.2	52.2	47.7	43.2	36.2	15.8	55.94
120	55.7	51.7	47.2	42.7	35.7	15.6	58.27
150	54.2	50.7	46.2	41.7	33.7	15.5	64.78
180	53.7	49.2	44.7	40.2	32.7	15.3	69.97
210	52.7	49.2	44.2	39.7	31.7	15.3	74.46
240	52.2	48.2	43.7	38.7	31.2	15.1	78.25
300	50.7	47.2	42.7	37.7	29.2	15.1	86.16
360	50.2	46.2	41.7	36.2	28.2	15.1	91.39
420	49.2	45.2	41.2	35.2	26.7	15.1	96.95
480	48.2	44.7	40.2	34.2	25.7	15.1	101.78
510	47.7	44.2	40.2	33.7	25.2	15.1	103.84
540	47.2	44.2	40.2	33.2	24.7	15.1	106.16
600	46.7	43.2	39.7	32.7	24.2	15.1	110.20
960	44.2	41.7	37.2	29.2	21.7	15.1	126.97
1020	43.7	41.2	36.2	28.7	21.2	15.0	129.30
1320	42.2	39.2	33.2	26.2	19.2	15.0	144.59
1680	36.2	32.2	27.2	22.7	17.7	14.8	161.53
1920	39.2	28.2	24.2	21.2	16.7	14.5	171.68
2040	27.2	26.2	23.2	20.2	16.2	14.5	175 18
2100	16.7	16.2	16.2	16.2	15.7	14.2	175.40

TABLE 5

Run No. 5—Butane. Pressure and Production Data

Barometric reading = 28.85 inches mercury = 14.2 lbs. per sq. in.

Temperature = 84° F.

Valve setting = 3/16 turn.

Time, T, in Minutes	Pressure, P, in Lbs., per Sq. In. Absolute						Quantity, Q_p, Cu. Ft., at 84° F., 14.2 Lbs., per Sq. In.
	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	
0	57.2	52.7	48.2	43.7	40.7	40.6	0
5	57.2	51.7	47.2	43.2	38.7	19.6	3.24
10	56.7	51.2	47.2	42.7	36.7	18.1	4.53
15	56.7	50.7	47.2	42.2	33.7	17.6	5.67
20	56.2	50.2	46.2	41.2	31.7	17.1	6.69
30	55.2	50.2	45.2	40.2	30.7	16.8	8.54
40	54.2	49 7	44.2	39.7	28.2	16.6	10.15
50	54.2	49 7	43.2	39.2	27.2	16.6	11.67
60	53.7	49.2	42.2	38.7	26.2	16.6	13.15
80	53.2	49.2	41.2	38.2	25.2	16.6	16.03
100	52.2	48.7	40 7	37.7	25.2	16.6	18.66
120	51.2	48.2	39.7	37.2	24.7	16.3	21.09
150	50.2	47.2	38.7	36.7	24.2	16.1	24.61
240	48.2	46.7	37 7	35 7	23.7	16.1	34.92
330	46.2	46.2	36.7	35.2	23.2	15.8	44.25
420	45.2	45.7	35.7	34.2	21.2	15.3	52.30
540	44.2	39.2	34.2	32.7	18.2	15.3	62.67
750	37.2	34.2	31.2	30.7	17.2	15 3	74.23
1320	34.2	32.7	29.7	30.2	16.7	15.3	99.08
1380	33.2	31.7	29.2	28.2	16.2	15.3	102.07
1500	32.7	30.7	27.7	27.2	16.2	15.2	107.83
1620	32.7	30.2	26.7	26.2	15.7	15.2	113.36
1740	31.7	28.7	25.7	24.2	15.7	15.2	118.78
1860	21.7	20.2	18.2	18.2	15.7	15.2	122.13
1980	16.7	16.2	16.2	16.2	15.2	15.2	125.44
2100	16 2	15.7	15.2	15.2	15.2	15.2	125.92

Test Procedure

Gage Readings: Before the test was started, the different initial gauge readings, due to the hydrostatic heads of n-heptane in the quarter-inch connecting pipes, were taken. These values were to be deducted from the subsequent gage readings during the run.

Filling the Pipe with Liquid: The filling of the pipe was carried out as follows:

The liquid butane (or propane) drum was set in an inverted position on a wooden frame on a platform scale. The outlet of the drum was connected to the two-inch A.P.I. pipe by a flexible connection. The initial weight was noted. Valves V_1 and V_2 were opened fully and valve V_3 was opened only slightly. The valve of the butane (or propane) drum was then opened and the drum was heated slowly by turning steam on it, caution being taken not to over-heat the drum. Air in the pipe was displaced by the incoming hydrocarbon liquid and vapor and escaped through the coil C and gas meter M. When the pipe was about half filled as indicated approximately by the decreased weight of the drum shown by the readings on the platform scale, the valve V_3 was choked to

ON THE ALERT!

In all parts of the world our armed forces—our Navy and Marine Corps, our Army and Air forces—are on the alert—patrolling land and sea and sky. Theirs is the task of watching over our interests.

We, too, stand constantly on guard—constantly on the alert to serve the best interests of our customers and our country.

NATIONAL BANK OF TULSA

The Oil Bank of America

Member Federal Deposit Insurance Corporation

TABLE 6

Run No. 1—Propane. Temperature Data

Atmospheric Temperature = 92° F.

Time, T, in Minutes	Temperatures, ° F.					
	Thermo-couple 1	Thermo-couple 2	Thermo-couple 3	Thermo-couple 4	Thermo-couple 5	Thermo-couple 6
0	92	92	92	92	92	92
30	90	89	89	90	90	90
60	88	87	87	89	90	90
90	87	87	87	88	88	89
120	87	87	87	88	88	89
150	87	87	86	87	87	88
180	88	87	87	88	89	89

TABLE 7

Run No. 2—Propane. Temperature Data

Atmospheric Temperature = 87° F.

Time, T, in Minutes	Temperatures, ° F.					
	Thermo-couple 1	Thermo-couple 2	Thermo-couple 3	Thermo-couple 4	Thermo-couple 5	Thermo-couple 6
0	87	87	87	87	87	87
30	84	83	83	83	86	85
60	84	83	83	85	86	85
90	83	81	83	84	84	84
120	83	83	84	84	84	84
150	85	83	83	83	84	86
180	84	83	83	84	85	86

TABLE 8

Run No. 3—Propane. Temperature Data

Atmospheric Temperature = 70° F.

Time, T, in Minutes	Temperatures, ° F.					
	Thermo-couple 1	Thermo-couple 2	Thermo-couple 3	Thermo-couple 4	Thermo-couple 5	Thermo-couple 6
0	70	70	70	70	70	70
30	69	70	69	70	70	71
60	69	69	70	69	70	70
90	69	69	69	69	69	69
120	69	69	69	69	68	68
150	69	69	69	69	69	69

TABLE 9

Run No. 4—Butane. Temperature Data

Atmospheric Temperature = 84° F.

Time, T, in Minutes	Temperatures, ° F.					
	Thermo-couple 1	Thermo-couple 2	Thermo-couple 3	Thermo-couple 4	Thermo-couple 5	Thermo-couple 6
0	84	84	84	84	84	84
30	82	82	82	83	84	84
60	81	81	82	82	83	83
120	81	81	81	82	84	84
180	81	81	82	82	84	84
240	80	80	81	81	83	83
360	80	80	81	81	81	81
480	79	79	79	79	79	79
600	78	78	79	79	79	79
1020	75	75	75	75	75	75
1320	77	77	78	78	78	78
1680	78	78	79	79	79	79
1920	79	79	79	79	79	79

TABLE 10

Run No. 5—Butane. Temperature Data

Atmospheric Temperature=84° F.

Time, T, in Minutes	Temperatures, ° F.					
	Thermo-couple 1	Thermo-couple 2	Thermo-couple 3	Thermo-couple 4	Thermo-couple 5	Thermo-couple 6
0	84	84	84	84	84	84
30	82	82	83	84	84	84
60	81	81	82	83	84	84
120	81	80	81	82	83	83
240	81	79	80	82	84	84
420	80	79	81	81	83	84
540	80	80	82	82	81	83
750	79	80	81	81	79	81
1320	75	75	75	75	75	75
1380	75	76	76	76	77	76
1500	76	77	77	77	78	77
1620	76	78	78	78	79	78
1860	77	79	79	79	79	79
1980	78	79	79	79	79	79

a very small opening in order to let whatever air which might still remain inside, escape and yet to keep back as much of the vapor as possible in the upper part of the pipe. It took about two to three hours to fill the pipe. When the pipe was filled as indicated by both weight of the drum and gage readings, both valves V_1 and V_2 were closed.

Any liquid overflowing through the pipe into the space between V_2 and V_3 was removed. For this purpose the valve V_3 was closed and the union U was disconnected. The valve V_3 was then opened to allow the hydrocarbon in the space to drain and vaporize. When this was accomplished, the union U was reconnected and the valve V_3 closed. The valve V_2 was then opened.

Before the run was started, the liquid hydrocarbon in the space between the drum and V_1 had to be drained.

The Run: The thermocouple leads were connected to a potentiometer. Readings were taken at one-hour or two-hour intervals for butane runs and at half-hour intervals for propane runs.

After initial gauge readings and the initial gas meter reading were taken, the run was started by opening valve V_3 and setting off a stop watch. The valve setting remained the same throughout the run. Pressure readings on all gauges and the gas meter reading were taken at definite intervals. Readings were taken every five minutes during the first part of the run. When the rate of production reached a low level, readings were then taken at successively larger intervals, of ten minutes, half hour, and one hour. The run continued until the hand of the gas meter ceased to move.

Three barometric readings were taken during the run and the average value of the three was used.

EXPERIMENTAL RUNS

Five runs were made on this artificial reservoir, namely:

Run No.	Hydrocarbon	Valve Setting No. of Turns	Liquid Level
1	Propane	3/16	Full Pipe
2	Propane	1/4	Full Pipe
3	Propane	1/8	1/3 Full
4	Butane	3/8	Full Pipe
5	Butane	3/16	70% full

The original pressure and cumulative production data are shown in tables 1 to 5 inclusive, and temperature data are shown in tables 6 to 10 inclusive.

Parts II and III of this series will appear in early issues of THE OIL WEEKLY.

LITERATURE CITED

[1] Fancher, G. H. and Lewis, J. A.: "The Flow of Simple Fluids Through Porous Materials." *Ind. Eng. Chem.*, **25**, 1145, (1933).

[2] Hetherington, C. R., and Huntington, R. L.: "The Unsteady Flow of Natural Gas Through Porous Media." C. R. Hetherington's Master's Thesis in Chemical Engineering, Univ. of Okla., 1941.

[3] Muskat, M., *The Flow of Homogeneous Fluids Through Porous Media.* 1st ed. McGraw-Hill, New York, 1937.

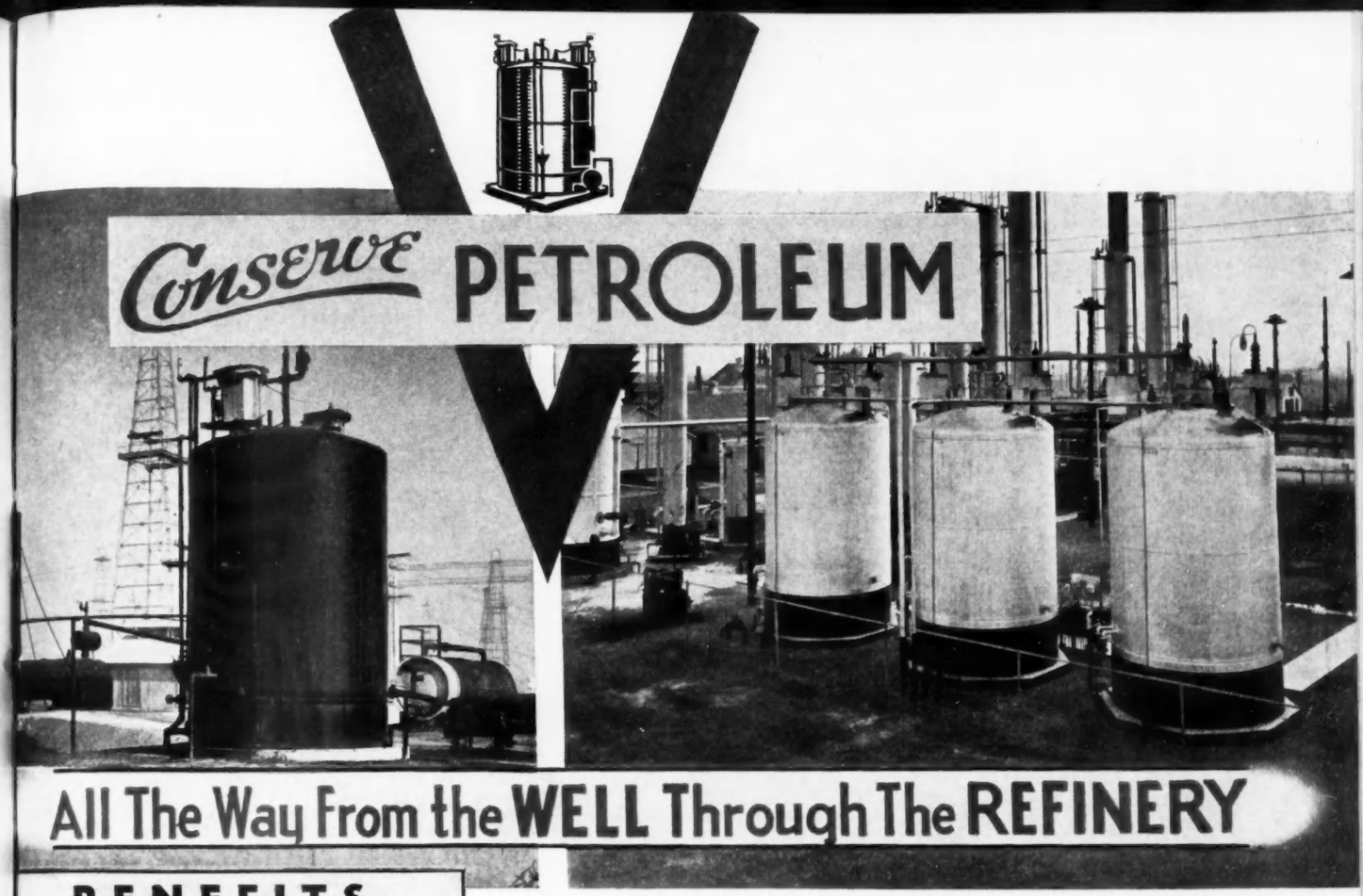
[4] Muskat, M., and Botset, H. G.: "Flow of Gas Through Porous Materials." *Physics*, **1**, 27, (1931).

[5] Muskat, M., and Meres, M. W.: "The Flow of Heterogeneous Fluids Through Porous Media." *Physics*, **7**, 346, (1936).

[6] Pierce, H. R., and Rawlins, E. L.: "The Study of a Fundamental Basis for Controlling and Gaging Natural Gas Wells." Part 1, *Rept. of Investigation* **2929**, Bureau of Mines, 1929; Part 2, *Rept. of Investigation* **2930**, Bureau of Mines, 1929.

[7] Rawlins, E. L., and Schellhardt, M. A.: "Back-Pressure Data in Natural-Gas Wells and Their Application to Production Practices," *Monograph 7*, Bureau of Mines, 1936.

[8] Reid, L. S., and Huntington, R. L.: "Flow of Oil-Gas Mixtures Through Unconsolidated Sand."*Petroleum Development and Technology*, AIME, 127, 226, (1938).



BENEFITS of PETRECO DEHYDRATING and DESALTING to:

The PRODUCING DEP'T: Petreco dehydrating, accomplished in the most efficient and economical manner in completely closed dehydrator units, assures the lowest M & B S cuts and highest shipping gravities; enabling users to meet the strictest conservation requirements and at the same time appreciably increase the revenue from the sale of their oil.

The PIPE LINE DEP'T: Complete Petreco dehydration at the wells assures lower viscosity crude and reduced pumping costs; with increased pipe line and tank capacities, and reduced corrosion due to salt water.

The REFINING DEP'T: At the refinery, Petreco's Desalting Process takes over, protecting costly refining equipment against corrosion, plugging, scaling, and the lost operating time caused by salts in the crude charging stock. Ammonia usage is reduced materially, and on-stream time increases as high as 1000% are cited by Petreco users. In many cases, specific improvements in refined products have been cited.

The producing, pipe line, and refining departments all benefit directly or indirectly by Petreco's dehydrating and desalting processes. And in addition, the crude oil and its various products are conserved and improved in conformity with the needs of our National Defense Program.

Oil companies, both in the United States and South America, are extending the use of Petreco processing with electric dehydrators at the wells and electric desalters at the refineries.

For any dehydrating or desalting problem, call on Petreco. Representatives convenient to all fields and refining centers are always at your service. Preliminary tests and surveys entail no obligation whatever.

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PETRECO

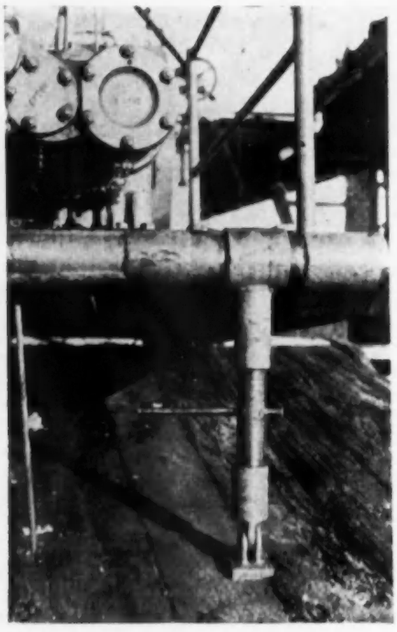
DEHYDRATING DESALTING

PRACTICAL OPERATING HINTS FOR

THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

1. RIGGING UP

Adjustable Reel Jack Utilizes Ramp Support



Caulks on foot and swivelled top post engage sloping ramp and support reel.

AN OIL company which uses a coring unit or reel for taking surveys expedites setting it in position when rigging up by equipping one end of the skids with jacks. The unit is usually placed on the derrick floor, ordinarily on the ramp side. Because of restricted space, operators find it expedient to place one end of the skid on the floor, the other extending out over the ramp.

With one end on the floor level, to keep the entire device level the end over the slope must necessarily be raised above the planking, hence use of jacks.

An especially made jack is used, constructed of a 2½-inch section of rolled steel about two feet long, with a hole drilled through its center for placing a bar as an aid to rotate. Opposite ends of the bar are conversely threaded, one end having right hand threads, the other, left. The threaded section operates in similarly threaded sockets made of 2½-inch pipe, with the lower section equipped with a steel spud-equipped plate suitable for gripping the ramp for security. Upper section is provided with socket which is attached to a cross member of the skid, with loose connection to permit swinging the leg in an arc into position for lifting, or to fold over the skid structure and occupy less space when moving.

When the unit and skid are placed in proper position on the floor, the two legs are lowered, and the jack handle rotated. This action causes opposite ends of the threaded bar to spread, effecting a longer leg, with the base coming into contact with the flooring, to provide support for the overhanging end of the skid. In this manner, the device is easily leveled, consequently rigging-up time is reduced.

2. RUNNING PIPE

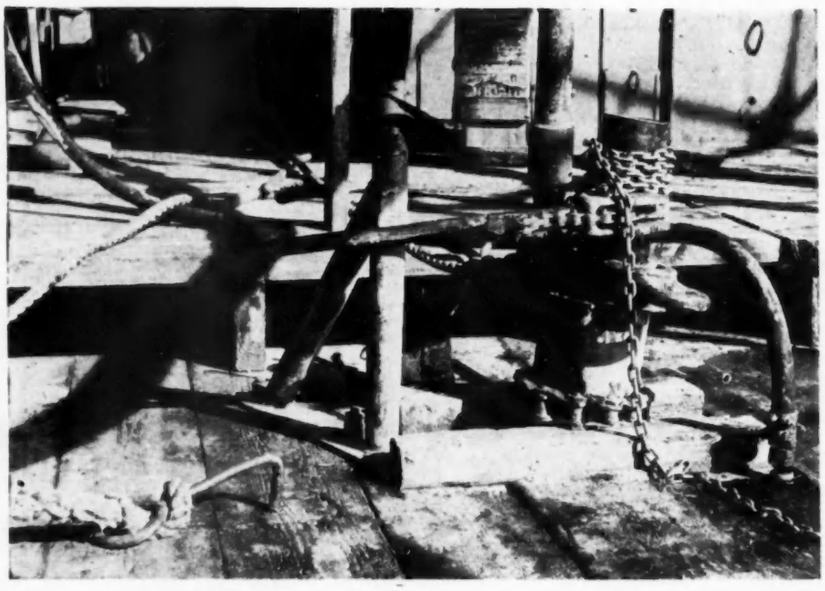
Spinning Chain Saves Time Over Rope Drive

USE of a 5/16- or 3/8-inch chain in place of that section of the usual spinning rope which contacts and grips the drill stem during make-up has been found by many drilling contractors to speed up this operation, the slightly longer time required to coil the chain previous to slipping it into place on the joint more than being returned in the better grip afforded on the pipe when strain is applied at the cathead. The slower coiling does not delay operations, there being ample time for this while the new stand is lifted from the stack and swung into registry with the pipe in the hole.

The chain is particularly effective when working during cold weather, the links cutting through a thin gloss of ice on the pipe wher a rope must slip sufficiently to generate friction and melt off the ice before grip is established.

A swivel at junction of chain and cat rope prevents kinking of either and makes for smoother operation.

Wear on the chain is easily detected, and replacement made when links begin to spread or stretch.



Swivel in spinning line at point of usual splice permits use of light chain for spinning in pipe and relieves catline of twist as turns unwind.

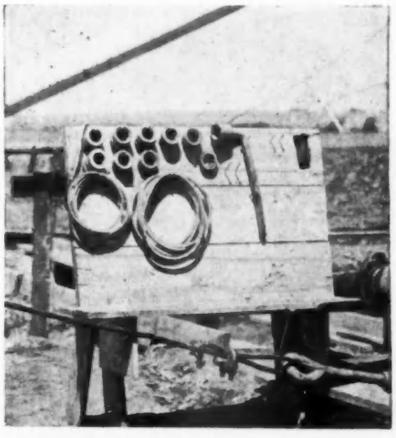
THE DRILLING RIG . . .

3. PARTS CARE

Rack Speeds Selection of Pump Repair Units

A CREW of Olson Drilling Company has built a special rack for properly handling pump parts which has proven a time saver as well as expense saver. The wooden rack and combination bench is 4 feet high by 4 feet long, with V-leg support. Such items as gland rings, large hydraulic rings (head gaskets), valve cup gaskets, small wrenches, valve inserts and bolts may be conveniently hung by nails on this type rack.

It is located adjacent the suction end of the pump. An attached bench provides a seat so that action of the pump may be observed from this point.



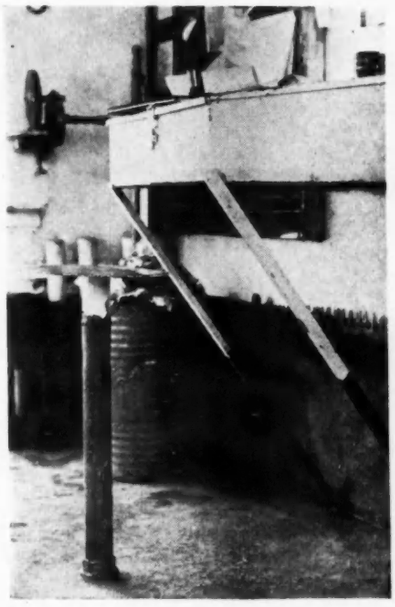
Inclined board unit with pegs and narrow base shelf display gaskets and check stock.

4. RECORDS

Seat at "Brains Box" Speeds Clerical Chore

WRITING of reports by the driller may be simplified by erection of a stool in the doghouse on which he may sit while performing this duty. This seat is placed permanently in front of the regular steel box in which all records are kept, being always in position for the driller when needed.

The stool is made from a 24-inch section of 2-inch pipe, equipped on the lower end with a bushing.



Steel disc, welded to pipe stand and set in welded floor socket, form work seat.

To the top of this pipe is welded a steel disk, cut in a circular shape about 12 or 15 inches in diameter, to provide a seat. The device is placed upright, and the bushing on the bottom is welded to the steel floor of the doghouse.

The stool is thus stationed in this position permanently, and when equipment is moved to other locations, is moved along with the rest, without trouble or inconvenience, and with no danger of loss during transportation. It is painted to match in appearance the remainder of the equipment.

5. SAFETY

Valve Cover Protectors Restrict Gasket Leaks

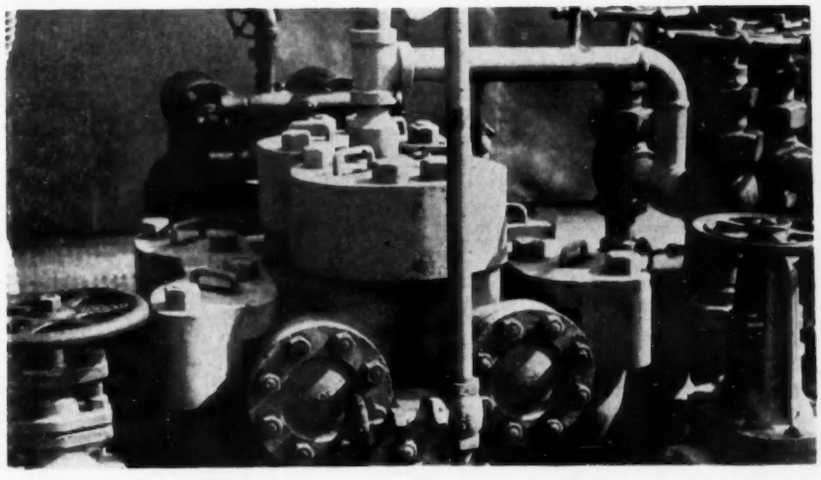
ON BOILER feed pumps, working against usual drilling-rig pressures of around 350 pounds p.s.i., gasketing of the valve chest covers must be carefully safeguarded to prevent serious scalds and other injuries in case of gasket failure and consequent spraying of the surroundings with high-pressure, high-temperature water.

To guard against this contingency, one company equips the boiler-feed pumps with sheet steel guards fitting over and held in place by the same studs used to retain the valve covers. These guards, cut by the welder to fit the pump top contour, have welded around the outer edges an apron which extends downward over the pump body casting far enough to intercept and deflect downward any escaping water released by gasket failure or cover leak.

Sufficient annular space is left between guard and pump body to afford flow room for water, and also to avoid possible binding of cover on casting and possible strain on the studs.

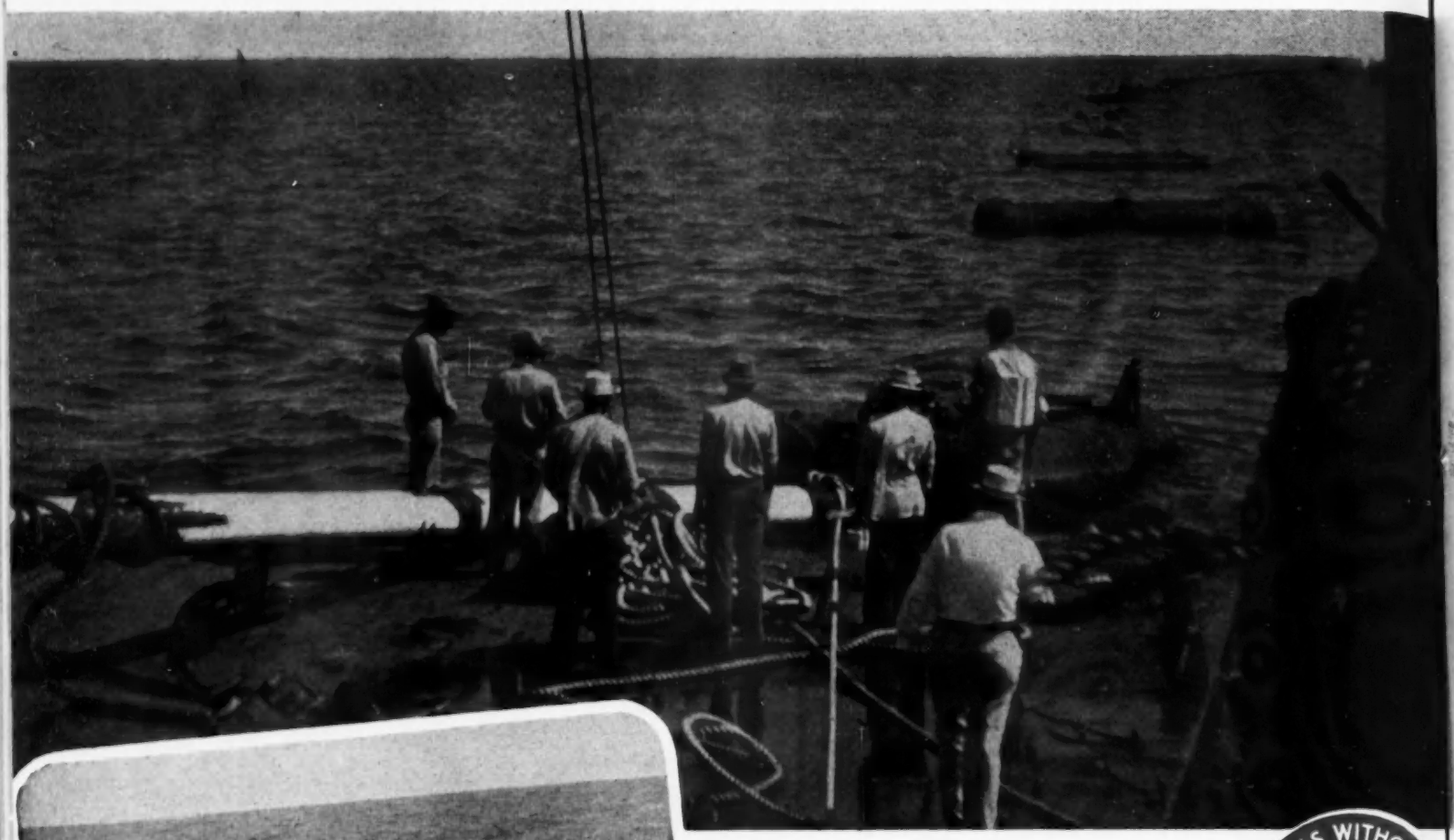
Loop handles, welded into the top surfaces of the guards, enable them to be lifted off and replaced without hazard.

Leaking of a gasket is indicated by drip which tends to follow line of guard and thus easily observed.



Welded from formed plate and with deep flanges, these shields set over valve covers and are retained in place by usual stud and nut equipment of pump.

Lake Pontchartrain crossing s



1. Towing a half-mile section of 14 in. O.D. NATIONAL Seamless Pipe out to the derrick barge on Lake Pontchartrain. The welding clamp and the other end of the pipe line are visible at the lower left.

2. Easy weldability of NATIONAL Seamless proved an important factor on this job, as rough water might put a stop to work at any time.

NATIONAL *Seamless* PIPE

3. Long sections of pipe, ranging up to 4300 feet in length, were fabricated on shore. These were moved by tractors as shown here.

4. The entire pipe was covered with a Somastic coating 5/8" thick as a protection against the corrosive action of marine growth.

ng sets *New Record* for underwater pipe lines

THIS new 14-inch gas line extends 25.3 miles under the waters of Lake Pontchartrain, the longest line ever laid across water. It was constructed by the United Gas Pipe Line Company and represents a notable achievement in American pipe line engineering because of the obstacles that were surmounted.

The line originates in the swamp lands of Louisiana, heads northeast to a difficult crossing of the Mississippi, then runs right through Lake Pontchartrain. From there it extends to a point near Mobile, Alabama, connecting with the existing Jackson-Mobile line and the lateral to Pensacola, Fla. The total length is 200 miles.

The 25-mile lake crossing turned out to be far more difficult than anyone had anticipated. High winds and storms stopped work time after time. New methods for handling the pipe had to be devised on the spot in order to make any headway. Sections of pipe as long as 4,300 feet were welded on shore, dragged into the water, then tugged out to the center of the lake on pontoons.

Here the sections were welded together on two barges with work proceeding toward both sides of the lake. When rough water made the longer sections unwieldy, the lengths were shortened to about 2,200 or 2,300 feet.

The importance of top-quality pipe was apparent on this job. The pulling and yanking on shore and the pitching and tossing of the barges caused terrific strains on the pipe. The welding had to be done fast to finish joints before the next high winds struck. What's more, the job had to be perfect because it was being laid on the lake bottom and couldn't be repaired without great cost.

Considering these severe requirements, National Tube Company is proud to have furnished all the pipe for the lake crossing — NATIONAL Seamless.

This line furnishes gas to the shipbuilding and industrial districts along the gulf and the naval base at Pensacola. It is one more link in America's vitally important underground fuel supply lines.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

United States Steel Export Company, New York

UNITED STATES STEEL

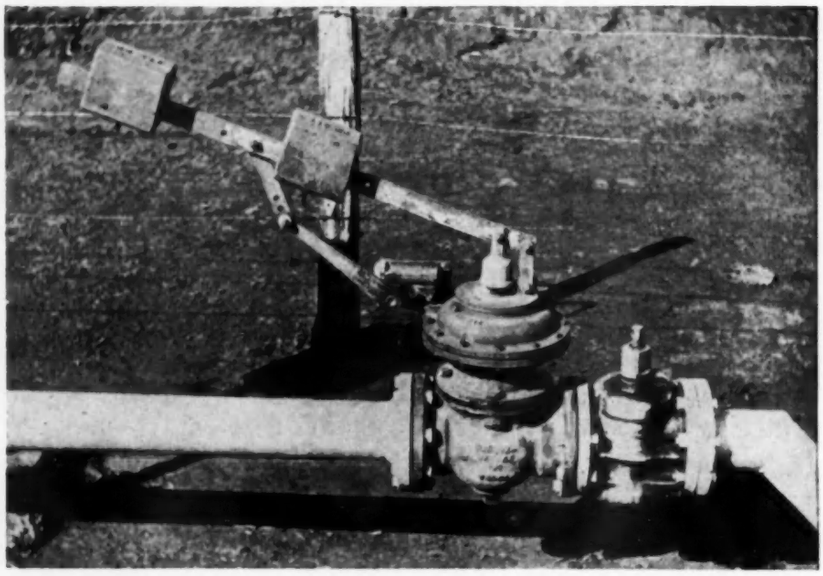
5. Total weight of the pipe and covering was 97 pounds per foot of pipe. This made handling difficult, as it was necessary to prevent damage to the coating.

6. Fastening a long section of pipe to pontoons preliminary to towing it out into the middle of the lake. The strength of NATIONAL Seamless was important here because of the strains caused by rough water.

PRACTICAL OPERATING HINTS FOR

1. FLOW STABILIZATION

Snubbing Action of Shock Absorber Controls Effect of Back Pressures



Adjustable linkage between counterweight arm and valve housing permits suppression of fluctuation and eliminates pound of valve on seat.

A USED and reconditioned automobile shock absorber of the double-action type may be attached to the lever arm and to the back pressure valve at the end of the meter run on the downstream end by means of a bracket and suitable linkage.

Hydraulic action of this rubber stabilizes the whole set-up, eliminating pounding of valve against seat and sudden pressure surges, simplifying the opening of the well, as well as smoothing action so as to produce a more uniform and neater chart on the meter.

A series of holes in the connecting link enables the absorber and arm to be set to operate through any desired arc of lever swing.

2. SERVICING

Trailer Carries Units Required at Well Site

SO THAT the service truck may leave the well at any time during a pulling job, one company has equipped and put into use one or two old type solid tired trailers that may be towed to the well and spotted at a convenient place beside the derrick floor.

The trailer is equipped with steel tool boxes, and racks of all types needed on such types of field work. At the front a solidly welded rack, consisting of several shelves or tiers, provides a catch-all for small tools, and miscellaneous valves or fittings. A vertical rod welded to the bed on one side of the trailer permits tubing elevators and spiders to be stacked up and held in place.

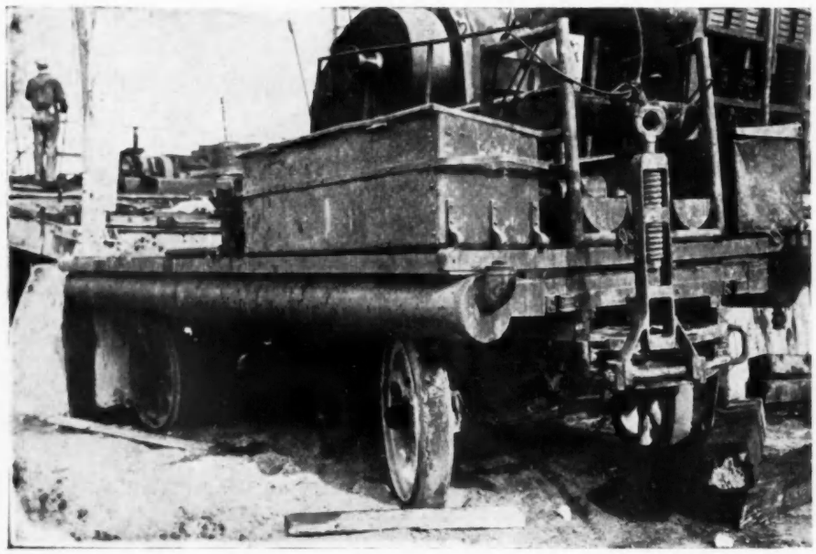
Fastened to the bottom of the bed, on each side of the trailer are tanks made up of 8-inch casing. Divided into several various-sized sections, these tanks hold water, cleaning solvent, gasoline and lubricating oil. To facilitate drawing off any fluid, outlet valves or spigots of both tanks are brought over to the same side of the trailer.

3. SAMPLING

Tank Bleeder Provides Dual Flow Inspection

TO SIMPLIFY obtaining shakeouts for testing oil before delivery to the pipeline, a bleeder for sampling may be provided at the storage tank. Such a bleeder is made of a short nipple of ½-inch pipe, welded flush to a small hole cut through the wall of the tank at a level about equal to the level of the main outlet. A nipple for this purpose should be about six inches long, and should be equipped with a valve.

To make the device more efficient, an ell is sometimes placed to divert flow of fluids downward, to



Freeing truck for other duties, this compact unit carries all well-servicing equipment and is spotted at well during clean-out operations.

THE PRODUCTION MAN...

Tapped into tank alongside flow line, this bleeder samples fluids and checks bottoms.

facilitate catching samples when they are taken and to provide against waste oil around tank.

As the bleeder is placed at the same level as the pipeline outlet, oil withdrawn from it is of the same quality as that which is received from the regular outlet. Accordingly, when the pipeline gauger takes a sample before accepting oil for the line, he is able immediately and conveniently to make tests of the fluid. During drainage of the tanks, he may make other readings if he desires. This attachment thus furnishes a convenient and expedient device for aiding the pipeline.

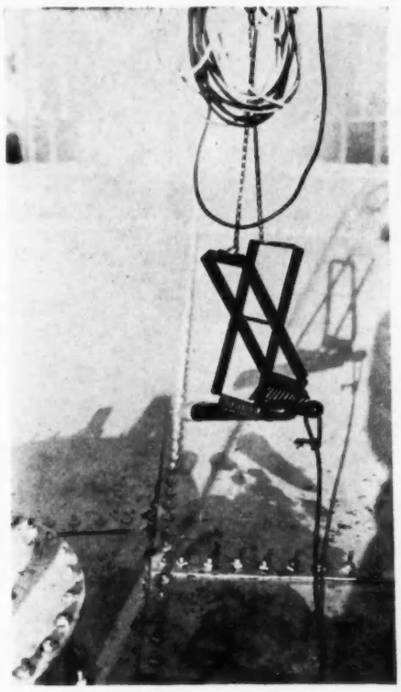
4. GAUGING

Fishing Tool for Use Through Gauge Hatch

THE high rate of mortality among steel gauge tapes, thermometers, sample thiefs and lines, may be attributed to their being accidentally dropped into the tank through the gauging hatch. Ordinarily, such tools may have to remain at the bottom of the tank for a number of months, until the tank is completely drained preparatory to cleaning bottoms.

A simple fishing tool made up by the welder of one large company has been used for some time, and with considerable success, in recovering such lost articles. It consists of two rectangularly shaped pieces of ⅛-inch by ¾-inch strap iron, pinned together with a 3/16-inch rod, to form an X-shaped tool. To the lower end of each of the arms is welded a short, ¾-inch strip of iron containing a number of 8d nails which have been brazed in place. To a small loop brazed to the top of each arm is attached a short, light chain, and to the chain is affixed a clothesline long enough to reach to the bottom of the tank.

In pinning them together, the two arms were allowed to retain just enough friction that they would remain in that position until



Grab operated through hatch is used to fish equipment dropped into B.S. and tank fluids.

the tool can be lowered to the bottom. When the tool is resting on bottom, a quick, light jerk on the line usually is sufficient to close the jaws in an action similar to that of a clam-shell shovel. The 10 to 20 nails in each of the jaws dig into the sediment on the bottom, and if the tool is over any lost article, it usually will take a firm grip over it, after which it may be brought to the top.

Since lost articles ordinarily will be confined to an area immediately below the gauge opening, the tool should be run a number of times, shifting to different positions on bottom and varying the technique of handling the tool in order to assure a fair chance of gripping odd-shaped articles.

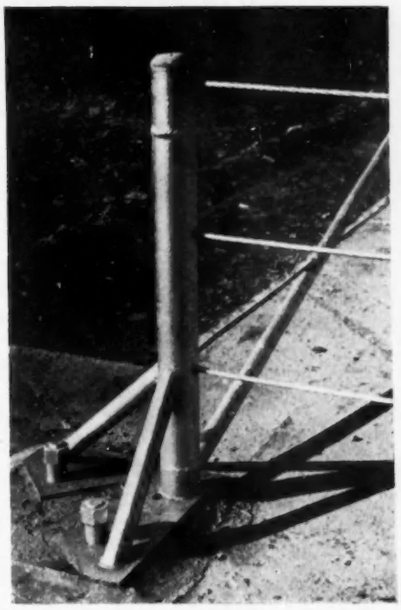
5. ENCLOSURES

Removable Well Fence Uses Derrick Bases

STURDY, yet easily and quickly disassembled fences surrounding flowing well locations may be made by setting short ¾-inch stud bolts in the concrete foundations at each corner of the concrete mat.

Corner posts are made up of 4-foot lengths of salvaged 3-inch pipe, welded and braced at the bottom to bases of flat boiler plate. The base plate is cut triangular, the corner post being welded to one apex, while the holes that slip over the hold-down bolts are cut in the other two. Corner posts anchored and braced in this manner permit a greater amount of tension to be applied to the sand lines stretched between the corners.

For added strength on the gate side of the enclosure, a single, 2-inch pipe diagonal is welded in place between the gate posts and corner posts. Two holes cut through each of these diagonals at the proper place, allow the sand lines to extend unbroken between the posts without deviating from straight line or chafing paint on braces.



Welded braces and unit base plate enable this shop-made post to be field erected.

N-19

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Texas Scrap Drive Starts

Much Material Expected From Initial Effort

By ELTON STERRETT
Equipment Editor

THE Texas petroleum industry's scrap collection campaign opens Monday morning February 23 with Collection Week.

In 100 Texas producing counties, oil and gas operators have piled up at their leases, yards or plants, all their irreclaimable scrap. Starting Monday, this scrap iron, steel, aluminum, other metals and rubber will be trucked to collection centers from where it will be moved out as soon as possible to mills now needing it. It will be handled, at the suggestion of federal conservation officials, through regular scrap dealers and brokers at prices set by OPA and much of it is expected to be sold to mills making oil-country goods.

Organized by the Texas Mid-Continent Oil and Gas Association at the request of the federal government, the scrap-collection program will continue as long as needed, Charles F. Roeser, general chairman, made clear.

"Scrap collection week, February 22-28, will mark only the beginning of our industry's campaign to 'get in the scrap,'" Roeser said. "It will go on actively until all the scrap now on hand is collected and moved out to the mills, and then continue as a permanent program so long as our nation needs the scrap."

Headquarters for the campaign have been established at the Texas-Mid-Continent Oil and Gas Association's offices, 907 Continental Building, Dallas. During collection week and as long afterward as is necessary, a staff of scrap experts will be available to county chairmen and committees as "trouble-shooters" in any area where needed. Directed from the Texas Mid-Continent office, these men, stationed at key cities in East Texas, Gulf Coast, Southwest Texas, West Texas, North Texas and the Panhandle can be dispatched to counties in their areas as becomes necessary. George C. Gibbons, executive vice president of the association, is in charge of collection headquarters.

READY FOR BIG SCRAP WEEK

Charles F. Roeser, chairman of the scrap drive for OPC District III, sponsored by the Texas Mid-Continent Oil & Gas Association, checks publicity given the scrap program in THE OIL WEEKLY as he awaits the opening of the special scrap week drive on February 22. Under his direction local chairmen have been appointed in each of Texas' oil producing counties, with co-chairmen to assist where distribution of oil fields makes further division desirable.

Arrangements for use of collection lots have been made in the collection centers by county chairmen and committeemen. In some counties, trackside lots are being used, with the scrap being weighed by public weighers and weight-tickets retained for use in collecting from the scrap buyer. In other towns and cities where oilmen have done business with the local scrap dealers, their yards already equipped with scales are being used. The selection of the lot is at the option of the local chairman and committee.

In some areas, operators are planning to truck in not only their own scrap but also that of farmers on whose leases they operate. This is purely optional, but will help in getting in large quantities of agricultural scrap from the oil campaign.

Last-minute instructions issued to county chairmen and state collection committee members by Chairman Roeser emphasized three things:

1. Collect all the scrap on all the

leases, yards, plants, etc., where they operate.

2. See that scrap collected is bought and moved out as soon as possible.

3. Urge that as much of it as possible move to mills making oilfield goods, to help alleviate the shortage now threatening the petroleum industry.

Some of the cast iron collected is expected to go to Texas foundries manufacturing oil equipment. This will put it back into use much more quickly and more cheaply than if all of it is moved to Eastern mills, Roeser commented.

No Use to Hold for Higher Prices

THOSE oil companies holding back their scrap in the hope of an increase in the ceiling prices for such material, will find little to encourage them in the news that Washington may freeze graveyard stocks of wrecked and obsolete cars and even institute requisition proceeding in instances where sales are not being made to scrap dealers.

Such a procedure with regard to stored scrap in the oil industry is not beyond the realm of possibility, even of probability, should the demand for scrap become sufficiently sharp. Since such requisitioning of steel scrap is based primarily upon the collecting of a specified tonnage of the material, it is less likely to consider all possible oil-industry use of materials than is the local management which, knowing field needs and loads, is best able to judge the potential utility of salvaged or replaced materials and, likewise, best able to clear out and move all scrap not further usable in its present condition or through reasonable reworking.

The oil industry can best further its own supply of necessary steel by lining up with the scrap-collection program, and not only bring in all accumulated scrap during the week of the drive, but also continue the flow of scrap material as and when it is found unsuitable for further use as is.

★ *Get in the Scrap* ★

Sun Oil Company has supplemented its blanket instructions to field superintendents to deliver scrap material to their respective collection centers with an order for an inventory of obsolete machinery and equipment on hand. Production and material department heads will canvass the inventories and pass judgment on which items shall be made available for scrap, or retained for rehabilitation.

★ *Get in the Scrap* ★

Publicity developed by the Texas Mid-Continent Oil & Gas Association in sponsoring scrap collection in Texas oil producing and refining centers has resulted in inquiries from owners of waste metals in other industries that are desirous of contributing toward the drive. George Gibbons, executive vice president, reports having received a telephone call from a Dallas business man of foreign extraction offering 1000 "bed" pans. Further questioning developed that the man was a local baker, and was trying to contribute discarded "bread" pans.

CHANGES AND ADDITIONS TO TEXAS *Scrap* COLLECTION CHAIRMEN

Supplementing the list of Texas scrap collection chairmen and centers as appearing on Page 44 of The OIL WEEKLY for February 16th, Chairman Charles F. Roeser announced the following last minute changes and additions:

County and Collection Center	County Chairman, Co-Chairman
Limestone, Mexia,	L. H. Simpson, J. K. Hughes, Inc.
Smith, Tyler,	B. G. Byars, Citizens State Bank.
Crane, Pecos, Upton, McCamey,*	Orville Fisk, Frick-Reid, Co-chairman.
Hockley, Levelland,	Frank DeWitt, Frick-Reid, Sundown, co-chairman.
Marion, Jefferson,	C. R. Heaton, County Agent, Jefferson, co-chairman.
Dallas, Dallas,	V. J. Waters, Oil Well Supply, Dallas, co-chairman.
Guadalupe, Seguin,	H. H. Weinert, Seguin State Bank.
Eastland, Eastland,	John H. Kleiner, Cisco, co-chairman.
Hardin, Beaumont,	B. G. Dowell, Saratoga, co-chairman.
Galveston, Galveston,	W. A. Rowen.
	Texas City, H. M. Dansby, Texas City National Bank, co-chairman.
Young, Graham,	Ben Wyly, Dunnagan Tool & Supply, co-chairman.
Winkler, Loving, Kermit,*	R. L. Daniel, Frick-Reid.
Montgomery, Conroe,	R. E. Floyd, Gar-Flo Oil, co-chairman.
Orange, Orange,	Clarence Keown.
Wharton, Wharton,	R. D. Wright, Wharton Security Bank & Trust.
Wichita, Electra,	Gordon Douglas, Electra, co-chairman.

The Week's News

East Texas Salt Water Order Effective April 1

The Texas Railroad Commission February 20 issued an order providing for return of salt water to the reservoir in the East Texas field. The order becomes effective April 1; the commission explained that time would be required to put it into effect. It authorizes the handling of the salt water by a duly incorporated disposal company. Operators may close in for six months wells producing 100 barrels of salt water daily or more, and produce the allowable for this well from other wells on the same lease. Wells so shut in must be tested at intervals of six months.

If wells on the lease are unable to produce the additional oil, then the "bonus" oil may be assigned to other wells on other leases. However, a maximum of six barrels may be assigned to any other well for production purposes. The premium offered for sending water into the disposal system is one barrel of oil for each 50 barrels of salt water injected, as provided in an earlier order.

Buyers Reveal Lower Crude Demand in Texas

Sharp decline in demand for Texas crude oil was the important subject at the statewide hearing in Austin last week. Need for West Texas crude was indicated especially low. Nominations filed by purchasers totaled 1,845,171 barrels per day which was a decline of 122,838 barrels from the February demand.

The largest cut in nominations was in West Texas where the total was reduced by 46,892 barrels. In Southwest Texas the demand was down 26,382 barrels. In the Gulf Coast, demand dropped 12,233 barrels and the nominations were 20,529 barrels lower for the East Texas field. The problem seemed to be one of transportation primarily. In West Texas the lines serving Wasson and Slaughter are operating at virtual capacity and pipe-line proration is threatened unless the reductions in individual well allowables are made.

Humble Oil & Refining Co. reported demand for Southwest Texas oil had diminished sharply. The company is now adding to storage almost half of its daily take of 25,550 barrels and anticipates a higher allocation to storage in March.

Of almost equivalent importance was announcement that East Tevas pressure had dropped 15 pounds in January. Dr. F. V. L. Patten, chief supervisor of oil and gas for the commission, said that this pressure decline could be arrested only by reducing withdrawals from the field. As an immediate step, he recommended a cut of approximately 15,000 barrels in daily production for March.

However, Patten said that the only permanent solution to the problem was the return of salt water to the reservoir.

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OIL IS AMMUNITION ★ KEEP 'EM PRODUCING

California Organizing In Depletion Fight

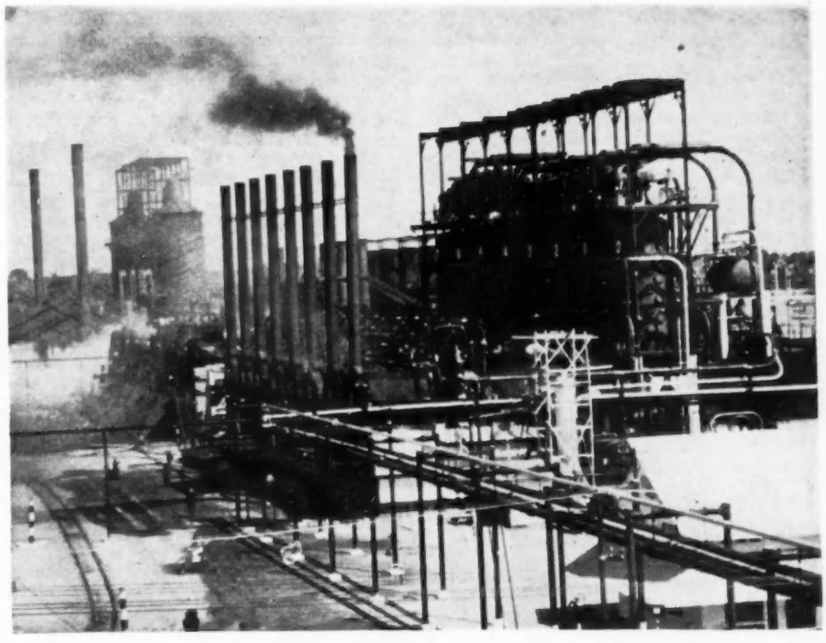
The California oil industry is making preparations to collect material in support of the present statutory depletion allowance granted most natural resource industries in computation of federal income taxes.

A state committee, composed of representatives of California Oil & Gas Association, San Joaquin Valley Oil Producers Association, California Stripper Well Association, and Oil Producers Agency has been set up and will beg immediate development of factual data. The material will be used to convince the Treasury Department that the depletion allowance is a necessary item for the oil industry instead of a tax "loop-hole."

Oklahoma Commission Protesting Allowables

Fixing of state production allowables upon a reserve formula (1) will not promote conservation, but may create waste; (2) will not further the war effort, but may retard it; and (3) will cause economic and governmental maladjustments in the several states which will have their allowables reduced, the Corporation Commission of Oklahoma has informed Petroleum Coordinator Harold L. Ickes in a lengthy letter seeking an appointment with him to discuss and analyze the situation.

Because the proposed adoption of reserves as the determining factor in fixing allowables is such a substantial departure from the previously used mar-



View of the refinery owned by Standard Oil Company at Palembang on the Netherlands East Indies Island of Sumatra. This is one of the prizes of conquest greedily eyed by the Japanese who have now overrun the Malay Peninsula and the Island of Singapore. (Photo taken from March of Time's Far East Command from International News Photos.)

ket-demand method, the transfer of production from one state to another will result, and this, explains the letter, will only create additional drains upon our already inadequate supplies of materials. This for the reason, it is explained, that refineries and pipe lines must be abandoned and reconstructed and relaid.

While the nation is at war is no time to try out an experiment that will result in discord, disunity and disorganization of a vital industry, it was further stated.

Oklahoma Hearing Set For February 26

Oklahoma Corporation Commission will hold its monthly hearing to fix allowables for state February 26.

Associations

Southwest API Program Adds War Speakers

Supplementing the previously announced (THE OIL WEEKLY, *February 16, page 60)* program of the Southwestern District, Division of Production, American Petroleum Institute meeting at Dallas, February 26-27, three speakers have been added, giving further emphasis to the war theme of the session.

"Civilian Defense" will be the subject of R. E. Smith, director, Eighth Region, Office of Civilian Defense, who will speak at the opening of the session Friday morning. Friday afternoon, "Procedural Policies" will be discussed by E. O. Buck, assistant district director of production, Office of Petroleum Coordinator, District 3, Houston.

Also on Friday afternoon, the meeting will hear an address by Judge Wallace Hawkins, general counsel, Magnolia Petroleum Company, Dallas.

WPRA Meeting to Be One-Day Session

Instead of the three-day annual meeting previously announced for New Orleans the annual meeting of the Western Petroleum Refiners Association will be confined to one day, March 25, in the Jefferson Hotel, St. Louis.

Wright W. Gary, director of refining of the Office of the Petroleum Coordinator, will speak extemporaneously on "The Importance of Refining in Wartime Economy." The business session will include election of officials and a meeting of the board of directors.

Sturbois Heads New Indiana Association

O. L. Sturbois, Vincennes attorney, was elected president of the newly-formed Indiana Oil and Gas Association, Inc., established by producers to coordinate plans for meeting the state's monthly production quota with the Indiana conservation department.

Other officers: Fred Grimme, Indianapolis, first vice president; E. D. Harmon, Griffin, second vice president, and E. J. Reading, Evansville, secretary-treasurer. Directors are Al Lager, Terre Haute; Grimme and Sturbois, B. F. Hake, Indianapolis and Reading; W. C. Vickery, Mattoon, Illinois; John Royse, Terre Haute, and Harmon, director at large.

Pipe Line News

Work Progressing On Venezuela Line

Roadbuilding at both ends of the Sinclair pipe line in Eastern Venezuela, running approximately 100 miles from the field brought in a year ago at Santa Barbara, State of Monogas, by Venezuelan Petroleum Company, to Puerta La Cruz, on the Carribean, has been in progress for some time and the 10-inch line should be completed by mid-summer. Williams Brothers have contract for construction.

The road is reported completed from the field to the Amama River, at which point a bridge will be built, and from the mesa to the Carribean terminal, which lies just east of Mene Grande's Puerta La Cruz terminal. It is possible that no road will be built immediately on some portions of the mesa.

Venezuelan Petroleum Company has four rigs running in the field with about 1000 acres proved up with 15 producing wells and 1 dry hole, on February 1. The wells, which produce from about 120 feet of very fine unconsolidated Miocene sand, are reported to be good for about 500 barrels each. By the time the line is completed it is anticipated that 50 wells will have been completed with a daily production of about 25,000 barrels.

Pipe for the line was ordered before the second well was completed early last year and was delivered in October. Work on the road was started before surface rights were secured in some instances.

Georgia Representative Approves TAPCO Line

Axis submarine attacks on American tankers have demonstrated the need for new pipe-line transportation and have shown the desirability of the Texas-Savannah line proposed by the Trans-American Pipe Line Corporation, it was declared February 17 by Representative L. Mendel Rivers of Georgia.

Disclosing that TAPCO has filed an application for priority with the War Production Board, Rivers made public correspondence with Deputy Coordinator Davies in which the latter gave his endorsement to the line.

The letters were written by Rivers to Davies and by the latter to Adlace F. Walker, executive vice president of TAPCO, last October.

Even at that time, Davies' letter showed, OPC officials were apprehensive over the transportation situation.

"The events of recent months have clearly shown that in an emergency, such as we are now experiencing, our normal facilities are not adequate to meet the unusual demands upon us in moving petroleum and petroleum products from the Gulf point of production to the Atlantic coast market," he wrote. "The diversion of tank ships from their usual service to purposes of national defense has already, as you know, forced us to curtail the consumption of gasoline on the Atlantic seaboard to a mild extent."

Under those circumstances, he said, additional pipe lines would be valuable.

Calling for quick action on the priority application, Rivers asserted that a network of pipe lines should be built to supply the East, releasing tankers for use in all parts of the world in which the United Nations are fighting.

Tapco representatives appeared before a special examining board appointed by Director of Defense Transportation Eastman at a hearing February 19 on the company's application for designation as a defense project.

They testified that the line could be built in 90 to 100 days after delivery of pipe and equipment, to move 60,000 barrels of oil daily from Wichita County, Texas, to Savannah.

While the board did not immediately pass upon the application, it was said in informed quarters that approval was unlikely at the moment, because of the proposed revival of the Texas-New York project and objections which have been voiced in Washington official circles to the construction of facilities to carry oil to coast points not of major consuming importance, where it can be bombed or torpedoed.

To Build 100-Mile 12-Inch Gas Line

Oklahoma Natural Gas Company will begin construction immediately on 100 miles of 12-inch gas line to supply an Army camp near Muskogee. The new artery will carry gas from Cement and Chickasha areas, Grady and Caddo counties to a point near Stroud, on the company's present system. A lateral to the camp will also be laid. Specifications are being completed and bids will be in within two or three weeks. The construction will provide a daily capacity of approximately 60,000,000 cubic feet.

Foreign Developments

Mexico Strengthening Oil Plant Defenses

Following the submarine attack last week on the Aruba refinery of Lago Oil & Transport Company, the Mexican government sent additional troops to Tampico and Progreso to strengthen protection of the refinery at Tampico and the Poza Rica oil field. The Ministry of National Defense announced last month that forces of local police and federal troops were being stationed in all the oil fields to guard against sabotage.

Low-Tariff Import Quotas Up for 1942

Imports of oil under the Venezuelan reciprocal trade agreement this year have been set at 2,958,202,800 gallons, compared with 2,517,390,800 gallons for 1941, it was disclosed last week by the Treasury Department, which announced that receipts in January amounted to 238,311,125 gallons.

All of the treaty countries will share in the increase in the quota of oil which may be imported on payment of half of the legally set excise taxes, but the greatest increase will go to the Netherlands, whose share will be 630,097,196

gallons compared with 378,806,000 gallons last year. The bulk of the quota, as contemplated in the agreement, goes to Venezuela, which was given an increase from 1,913,049,600 to 2,082,574,771 gallons, while Colombia's share is increased from 86,956,800 to 94,662,490 gallons. Mexico also will be permitted to send in more oil, her quota being fixed at 150,868,343 gallons compared with 138,578,400 gallons for 1941.

January receipts, the treasury reported, included 109,508,371 gallons from Venezuela, 67,811,063 gallons from the Netherlands, 22,921,014 gallons from Colombia, and 38,070,677 gallons from Mexico.

Second Casabe Wildcat In Colombia Completed

Shell Oil Company of Colombia has completed Casabe 2 on the Yondo concession in the middle Magdalena river valley and the test is reported to be a producer on the pump. Total depth is 3670 ft. The casing program was: 20-inch surface string set at 96 feet, 13⅜ at 497 feet, 9⅝ at 2940 and 6⅝ inch tubing and liner set at 2900 feet.

This is the second successful wildcat in the valley. Casabe 1 is reported producing about 2000 barrels monthly of 20-gravity oil being used as fuel on the concession.

Bolivian-Standard Settlement Approved

Settlement of the controversy between Standard Oil Company of New Jersey and the Bolivian government over the expropriation of Standard properties on March 13, 1937, was announced February 16 by the State Department at Washington.

The department said the settlement, made at Rio de Janeiro last month, (THE OIL WEEKLY, *February 9, page 54)* involved payment to the company of $1,500,000 for all its rights, interests and properties in Bolivia.

"The Government of Bolivia will pay to the Standard Oil Company (New Jersey) the sum of $1,500,000, United States currency, at the State Department in Washington, for the sale of all of its rights, interests and properties in Bolivia and those of its subsidiary, Standard Oil Company of Bolivia, as they existed immediately prior to March 13, 1937, and likewise for the sale of its existing maps and geological studies which are the result of its explorations in Bolivia," the formal State Department announcement said. "This payment will be made with interest at the rate of three percent per annum, from March 13, 1937, within 90 days from the date of the supreme resolution of the Republic of Bolivia putting this agreement into effect.

"The Government of Bolivia, Standard Oil Company (New Jersey), and Standard Oil Company of Bolivia declare that upon the payment of the amount referred to immediately above, no issue will remain pending between them and that there will be no occasion for any claims or counter-claims of whatsoever character, since the fulfillment of the present agreement, which has been freely entered into, shall be regarded as having terminated satisfactorily and amicably all the differences between the Bolivian government and the companies."

Coordinate California Field Protection

Safe guarding of California oil fields, refineries, storage facilities, loading terminals, and pipe-line systems has been consolidated under a newly formed Oil Industry Protection Committee, of which A. C. Rubel, vice president of Union Oil Company of California, is chairman, and of which George F. Prussing is engineer in charge.

In taking over the newly consolidated defense setup, Rubel declared that the industry's efforts to prevent sabotage will help to assure an adequate supply of California oil for the war in the Pacific, and also will minimize possibility of fire and damage to property and danger to life in areas surrounding oil fields and refineries.

The consolidated committee, composed of members representing various interests in the industry and separate geographical locations in the state, is the outgrowth of the original Oil Field Protection Committee, organized early in December, and a committee formed by the American Petroleum Institute to develop protection of storage, refining, loading and transportation facilities.

The latter committee, which has been in existence for nearly two years and was organized at the direct request of military authorities, has been cooperating closely with the Army and Navy, and has developed a comprehensive program not only for protection of refineries and loading facilities, but also has developed a program of immediate emergency action to combat fires or other sabotage.

The interest of the field committee organized in December was directed particularly to the protection of fields from sabotage. This group developed a program based upon formation of field committees in each oil field in the state and charged with protection of a particular field. Pooling of all fire-fighting equipment, maintenance of 24-hour telephone service from a central point, and inter-communication between the field committee and the military and civil authorities concerned in the immediate area were all fully established.

Activities Coordinated

Activities of various field committees will be coordinated through the new Oil Industry Protection Committee which will keep the field groups advised of the latest steps and all late information respecting proper methods of anti-sabotage activities.

The Oil Industry Protection Committee is also acting as liaison agent between the oil industry as a whole, the state officials concerned with defense matters, the State Guard and United States military authorities. In this effort, the committee not only keeps the various authorities advised of the progress being made by the oil industry in self-protection, but also keeps them advised of the needs of the industry in protective matters over which it has no control or authority. In turn, military and local authorities have kept the committee advised as to the responsibility of the industry, and as to the line of demarcation between the protection they can give and the protection that the industry must arrange for.

An example of the type of activity in which the committee has interested itself is the working out of a method of designating certain oil industry vehicles as emergency vehicles so that they will be authorized to use the highways during blackouts. The committee has advised state authorities that, in the event of a fire in the oil fields or in a refinery, it may be necessary to assemble oil industry fire-fighting equipment and crews from other areas than the one immediately concerned and that, to assure such assembling during a blackout, certain vehicles must be designated as emergency vehicles.

Identification of Workers

The committee has also gone into the matter of identification of workers, so that those who may have to go through military cordons or fire lines will be permitted immediate access to the property. This matter is under discussion with designated authorities, as is the question of proper control of traffic through oil fields.

Membership of the committee gives a broad scale representation of the oil industry's various activities. It includes men directly concerned and familiar with refinery, oil-field, pipe-line, natural gas, natural gasoline, and loading-facility problems.

In consolidating the activity of the preceding committees, the Oil Industry Protection Committee has divided the state into two districts, north and south, with the dividing line falling roughly along the northern border of Madera County. It has likewise divided its work in accordance with the prevailing type of oil industry activity, so that in the northern part of the state, where there is little or no production of oil, but there are many vital refinery, storage, and loading facilities, the work is generally under the supervision of F. S. Clulow, vice president of Shell Oil Company, who has been active as a member of the committee which has already prepared plans for protection of such installations. To his activities, however, has been added the protection of such oil and natural-gas production as lies in the area.

In the southern part of the state, where oil fields and production of oil predominates, the committee has taken over the activity of the original field groups, with emphasis being placed on protection of fields, together with the protection of such refineries and gasoline plants as are located in the fields. Protective measures already developed for refining locations and for loading facilities are being carried on by those who had previously directed this work, and who are now represented on the general committee so that all efforts at prevention of sabotage and protection of oil property are coordinated.

Members of the consolidated committee in addition to Rubel and Clulow, are: A. A. Jergins, R. A. Sperry, J. B. Hutchins, F. E. Coyle, R. Fenton, H. P. George, P. S. Magruder, R. D. Montgomery, A. S. Patrick, C. C. Scharpenberg and Prussing.

Congress

[*Continued from page 13*]

East Coast inventories, 8,400,000 barrels above last year on January 1, had deteriorated by February 7 to a total of 5,705,000 barrels under last year. A decline at this period of the year is normal, he admitted, but that now in progress is of much greater than usual proportions.

Explaining stocks in detail, he said crude supplies are 2,693,000 barrels under a year ago; gasoline down 543,000 barrels; light heating oil off 634,000 barrels and heavy fuel oil short by 1,835,000 barrels.

It was in anticipation of a possible situation of this nature, he declared, that OPC last summer took steps to build up supplies, without which conditions now would be far more serious.

The coordinator quoted in full a report of the oil-company executives whom he had called into conference February 10, showing that East Coast stocks were reduced during January at three times the normal rate for that month and pointing out that "so far as the over-all outlook for transportation facilities between now and April 1 is concerned, while the completion of several tankers is hopefully anticipated, it seems only reasonable to assume that these cannot be expected to offset further diversions already in sight and possible additional sinkings."

Treat East-West the Same

Suggesting possible steps to be taken to alleviate the situation, the report recommended that since a number of East Coast tankers have been diverted to help out the West Coast, "it would seem only fair that West Coast consumption should be curtailed to about the same extent as may be decided upon for the East Coast."

Ickes admitted that, from the very first, he has taken a "pessimistic" view of the situation — a view, he contended, which has been more than justified by events. All of his actions of the past nine months have been based upon the possibility that those things which have happened would happen.

Primarily, this viewpoint was responsible for his effort last summer to secure priorities for the proposed Texas-New York 24-inch crude line, which would bring in 300,000 barrels a day and, with additional pumping equipment 350,000 barrels.

He emphasized that he did not quarrel with the refusal of the Supply Priorities and Allocations Board to grant the application, but disclosed his intention of asking for reconsideration in light of the fact that we now are at war.

The need for additional pipe lines, Ickes asserted, was brought out by Interior Department experts more than 20 months ago, but no action ever was taken by the companies. "It would be very comforting to have an underground transportation system, which could not be torpedoed nor sunk, delivering 350,000 barrels of oil every day into the great war-industry and thickly inhabited areas of the East," he commented.

Ickes also spoke briefly of the efforts to increase the production of 100-octane gasoline, 91-octane for training planes and tanks, synthetic rubber and other specialties needed by the military services, but said details of those matters would be given by OPC experts when they testify.

Ickes Commends Industry

The coordinator frequently spoke in commendation of the industry's cooperation. Difficulties expected in getting large and small interests together never developed. The industry came through with everything asked of it, and a new spirit of understanding and confidence has been created, he said.

Questioned by Chairman Lea and Representative Charles A. Wolverton of New Jersey as to the desirability of legislation legalizing the "clearance" which the Department of Justice now gives to concerted actions by the oil and other industries requested by defense agencies, Ickes admitted that there was no legal basis for the present procedure but said he had no desire for legislation because of the wholehearted support which was being given by the industry. At the same time, he pointed out, there are particular phases of the oil industry which justify taking it out of the purview of the Sherman Act.

The coordinator reminded the committee that better cooperation was secured by voluntary action than under duress and "the poorest possible way to run the oil industry is to wield the policeman's club over their heads all the time."

"I have the hope that I can lay down this job, when I do lay it down, as an outstanding example of what cooperation can do," he added.

At the outset of the hearing, Chairman Lea explained that subcommittee chairman Cole planned to go into all phases of the oil situation, in the course of which OPC officials would be questioned and industry representatives asked to testify. The inquiry, he disclosed, was prompted by the numerous sinkings of tankers and the necessity to transfer vessels from the Gulf-Atlantic service to military use.

The investigation also will go into the questions of high-octane gasoline and synthetic rubber and "many other of the important and ramifying problems" facing the industry at this time.

• WPB •

May Cut Off Tubular Steel Production

Steel for bombs rather than oil wells was under consideration in Washington this week, with possibilities that WPB may issue orders prohibiting the use of tubular steel by the industry.

Admittedly still in the talking stage, the plan is to produce untold millions of bombs in anticipation of the time when they can be used. To do this, it was said, it will be necessary to cut off the supply of steel for a number of industries and, it is believed, the oil industry can operate to limited extent without tubular pipe.

Spacing Patterns Given In Revised M-68

The long-awaited revision of Conservation Order M-68, dealing with the spacing patterns for new oil and gas wells, were issued by the WPB division of industry operations February 18, together with an interpretation of the term "lease equipment."

The revision incorporates a new section in the original order, providing for the maintenance of a geometric pattern for new wells in relation to each other, to be within

100 feet of absolute geographic identity or within 150 feet of the geographic center of a square drilling unit.

In the case of irregularly-shaped tracts, provision is made for the blocking out of acreage in conformity with the density of wells or drilling pattern contiguous to new developments, and no portion of a drilling unit may fall within 330 feet of an existing oil well or 1320 feet of an existing gas well.

Provision is made for the consolidation of interests of less than 40 acres in oil fields and 640 acres in gas fields.

New wells must be drilled at least 990 feet in oil fields and 3960 feet in gas fields from any well spudded in subsequent to December 23, last, and 660 feet (2640 feet for gas) from any well spudded or completed before that date.

Wells must be drilled at least 330 feet in the case of oil and 1320 feet in the case of gas from any lease, property or subdivision line which separates unconsolidated property interests.

The revision, recommended by the Petroleum Coordinator, will permit "the efficient drainage of petroleum within any particular reservoir on the basis of spacing provisions, and assures consolidation of all individual property interests to the end that uniform drainage can be achieved without an undue consumption of steel," it was explained by OPC.

Coordination officials pointed out that the first well spudded in the field after December 23, last, will set the pattern for the remainder of the field, but that spudding at the center location will be considered as conforming to any spacing pattern established by the first well spudded after issuance of M-68.

The interpretation accompanying the revision defined lease equipment as fixed or stationary equipment and material installed within the productive boundaries of any field for direct or indirect use in production, including office or camp facilities adjacent to a field, but not including wells, well equipment, pumping or artificial lifting facilities, flow lines or gathering lines, or cycling or pressure maintenance plants or plants for the extraction of natural gasoline or for other treatment or processing of gas.

New Spacing Revisions to Order M-68

AMENDMENT No. 3 OF CONSERVATION ORDER M-68

1047.1 Conservation Order No. M-68 is hereby amended by inserting after paragraph (c) thereof a new paragraph (d) as follows, and relettering the ensuing paragraphs accordingly:

(d) Determination of Uniform Well-Spacing Pattern

(1) Subject to the provisions of (2) below, each well "spudded" subsequent to December 23, 1941, in any oil or gas field, other than a Condensate Field, on any proposed drilling unit consisting of not less than forty surface acres in the case of any oil field or of not less than 640 surface acres in the case of any gas field, shall be deemed to conform to a "uniform well-spacing pattern" for the purposes of paragraph (c) (7) and (8) hereof, where such well is drilled in accordance with the following terms:

(i) Each well shall bear the same geographical relationship with respect to the square drilling unit upon which it is to be located as all other wells drilled subsequent to December 23, 1941, bear to the respective square drilling units upon which such wells have been or are to be located; *Provided,* that subject to the provisions of (2) below, any well which is to be drilled shall be considered as conforming to a uniform well-spacing pattern where such well is to be located within 100 feet of the point at which absolute geographic identity would be attained or where such well is to be located within 150 feet of the geographic center of a square drilling unit; or

(ii) Where property interests (including leasehold or other property interests) in irregularly shaped tracts necessitate departures from square drilling units, a well may be located on any drilling unit consisting of not less than the prescribed number of surface acres (40 surface acres in the case of an oil field; 640 surface acres in the case of a gas field); *Provided,* that such well is drilled in conformity with the provisions of (2) below.

(2) No well "spudded" subsequent to December 23, 1941, shall be considered as drilled in conformity with a uniform well-spacing pattern unless:

(i) The proposed drilling unit upon which such well is to be located consists entirely of acreage which is not attributable to any well other than such proposed well. The acreage attributable to wells offsetting the proposed drilling unit shall be determined by assigning to such wells an acreage equivalent to that in the existing well density or drilling pattern contiguous to such wells. In the case of an oil field no portion of a drilling unit shall fall within 330 feet of an existing well; in the case of a gas field no portion of a drilling unit shall fall within 1320 feet of an existing well; and

(ii) The direct linear distance between any two points which are farthest removed from each other on the drilling unit upon which a well is to be drilled does not exceed the length of the diagonal of a rectangle whose length is twice its width and which is equivalent in surface acreage to such drilling unit; and

(iii) All separate property interest of less than 40 surface acres in the case of an oil field, 640 surface acres in the case of a gas field, or in tracts on which a well cannot otherwise be drilled by virtue of the provisions of this Order, surrounding the designated drilling location of any well, are first consolidated with each other, another, or other property interests to form a drilling unit (consisting of not less than 40 surface acres in the case of an oil field; 640 surface acres in the case of a gas field) on which a well may be drilled; and

(iv) Such well is drilled at least 990 feet in the case of an oil field or 3960 feet in the case of a gas field from any well "spudded" in such field subsequent to December 23, 1941; and

(v) Such well is drilled at least 660 feet in the case of an oil field or at least 2640 feet in the case of a gas field from any well "spudded" or completed in such field on or before December 23, 1941; and

(vi) Such well is drilled at least 330 feet in the case of an oil field or 1320 feet in the case of a gas field from any lease line, property line or subdivision line which separates unconsolidated property interests.

This Amendment shall take effect immediately.

Issued this 18th day of February, 1942.

/s/ J. S. KNOWLSON,
Director of Industry Operations.

INTERPRETATION No. 2 OF CONSERVATION ORDER M-68, AS AMENDED

The following official interpretation is hereby issued by the Director of Industry Operations with respect to Section 1047.1, Conservation Order M-68, dated December 23, 1941, as amended from time to time.

The term "lease equipment," as used in Conservation Order M-68, means the fixed or stationary equipment and Material installed on any property located within the productive boundaries of any field for direct or indirect use in the production of petroleum, including production office or camp facilities located adjacent to any field; but not including the well, well equipment, pumping or artificial lifting facilities, flow lines and gathering lines from the wells, cycling plants, pressure maintenance plants, and plants for the extraction of natural gasoline and associated hydrocarbons or for other treatment or processing of gas.

Issued this 18th day of February, 1942.

(signed) J. S. KNOWLSON,
Director of Industry Operations.

Last Minute Changes In Order P-98

A revision of preference rating order P-98 eliminating the requirement for countersignature from the district office of OPC on purchase orders for maintenance and repair materials costing less than $500 but not including any materials used in development or depletion, was issued over the week-end by WPB.

Elimination of the requirement that an operator secure a countersignature from OPC officials in district offices has been often requested by both the industry and officials of the coordinator's office.

The amendment removed the countersignature requirement on purchases of maintenance and repair materials costing less than $500 for all but one group of oil industry materials entitled to an A-8 or A-10 priority, and also eliminated the countersignature formerly required on purchase orders for certain materials eligible for preference rating of A-2 or higher.

Countersignature will be required hereafter only on purchases by operators but not suppliers of A-8 and A-10 rated materials costing more than $500 and on all purchases of materials regardless of cost used exclusively in the development and depletion of any pool as defined in paragraph (B) (1) (V) of P-98.

Under the procedure for the purchase of materials on A-2 or higher ratings hereafter except for materials for use in research activities all applications for ratings of this level or better must be filed by operators but not suppliers with the OPC in Washington. No countersignature will be required but applications must include the detailed information required under the appropriate paragraph of P-98 paragraph (E) (2).

As for materials needed for research in connection with production and refining operations as defined in paragraphs (B) (1) (II) and (B) (2) (IV) of P-98, purchases may be made directly from suppliers without obtaining countersignature of district officers of the OPC or making formal application to the OPC in Washington.

Tankers Pooled for Eastern Shipments

All tanker tonnage available for the movement of oil to Atlantic ports was thrown into a pool for allocation among all suppliers of the area under Recommendation No. 36, issued by OPC February 18.

The recommendation called upon the transportation committee for District 1 to prepare a program for efficient utilization and operation of oil ships "on a basis that will enable the equitable sharing of the available tonnage by all affected units of the industry."

The production of oil and its by-products in all its multiple phases must and shall go forward, with close adherence to plans coordinated by those chosen to lead us, if we are to win the war. From explorer to consumer the industry is united in a great "all out" effort and here at the Republic National Bank, we are proud of our participation in such a program. We invite the oil industry to discuss financing needs with us, for your problems are ours and we are interested in your welfare.

REPUBLIC NATIONAL BANK
OF DALLAS
MEMBER FEDERAL DEPOSIT INSURANCE CORP.
ONE OF THE NATION'S 100 LARGEST BANKS

Oil Shipments to East Coast Are Retarded

Disruption of tanker movement to the East Coast from the Gulf Coast and the Caribbean was prominently reflected in statistics covering the week ended February 14. The adverse effect on supply areas of the Southwest also was shown in the figures.

On the West Coast trends were normal, except that there was again a heavy withdrawal of residual fuel oil from storage in supplying extraordinary military and industrial requirements.

Refinery runs slowed down sharply on the East Coast and gasoline production decreased materially in that district and made necessary a contra-seasonal draft on storage, while it also was necessary to draw heavily on stocks of heating oil. However, the industry was putting forth effective efforts to alleviate the scarcity of heavy fuel oil in the East Coast district, and despite transportation troubles, stocks of that product were increased 13,000 barrels.

Having declined 70,000 barrels from the previous week's rate, the East Coast plant throughput of crude was 513,000 barrels daily, or 71.8 percent of rated capacity. Gasoline production per day consequently was down 42,000 barrels, and 26,000 barrels daily came from storage to supplement current output. Gas oil and distillate fuel, consisting largely of heating oil and now needed seasonally in large volume in the East and North, was turned out at a subnormal rate at the Eastern refineries and probably came in from the Gulf Coast in smaller than usual volume, and therefore East Coast stocks supplied the exceptionally large amount of 2,428,000 barrels. That withdrawal largely accounted for the decrease of 2,526,000 barrels in light fuel oil stocks throughout the United States; corresponding week last year, showed only a 750,000-barrel reduction.

In the Appalachian region, refinery runs were down very slightly, but gasoline production was off 11,000 barrels daily and 129,000 barrels of that product came from storage, while light fuel stocks were reduced a little and heavy fuel oil storage was expanded.

Texas Gulf Coast refinery runs were cut back 11,000 barrels daily, while gasoline production was reduced 27,000 barrels daily, as demand lagged. And even so, there was a backing up of 316,000 barrels of gasoline in storage (45,000 barrels daily). Stocks of light fuel oil meanwhile expanded 120,000 barrels (17,000 daily), but there was a draft of 9000 barrels from stocks of heavy fuel.

Louisiana Gulf Coast refinery runs were reduced and gasoline production was cut 6000 barrels daily, yet that product went to storage in the volume of 13,000 barrels daily. Light fuel oil stocks were reduced 13,000 barrels a day and heavy fuel stocks were cut 1000 daily.

In California, refinery runs were down 26,000 barrels daily, to 65.6 percent of capacity, but daily average gasoline production was up 11,000 barrels, and 4000 a day went to storage, although 3000 barrels daily came from light fuel storage and 105,000 per day from residual fuel stocks.

In the Middle West, refinery runs were increased moderately, but gasoline production was lowered, as demand sagged, and stocks of that product increased nearly a million barrels. Meanwhile, light and heavy fuel oils came from storage each in the amount of about 100,000 barrels or about 15,000 daily.

Refinery runs were up in Oklahoma-Kansas-Missouri, and gasoline production was higher, with the result that stocks increased 290,000 barrels, while heavy fuel oil storage also expanded, although some light fuel oil was taken from storage.

Inland Texas showed small decreases in refinery runs, gasoline production, and gasoline stocks and a 10,000-barrel per day withdrawal of heavy fuel oil from storage, while stocks of light fuel oil were increased slightly.

North Louisiana and Arkansas registered small increases in refinery runs, gasoline production, gasoline stocks, and light fuel oil stocks, but 5000 barrels daily of heavy fuel came from storage.

In the Rocky Mountains, crude runs to stills were stepped up slightly, gasoline was produced at the same rate as in the previous week but went ot storage by 10,000 barrels daily, while stocks of light and heavy fuel oils were virtually unchanged.

For the United States, refinery runs averaged 3,772,000 barrels daily in the week ended February 14, down 81,000 from the previous week. The runs were, however, 166,000 barrels daily, or 4.6 percent, above the rate in the corresponding week last year.

Gasoline stocks rose 1,572,000 barrels, to 101,796,000 barrels, and then almost equaled the all-time record of April 20, 1940. The new total was 8,000,000 barrels (8.5 percent) above that of 93,801,000 reported a year previously. Stocks of light fuel oil are now only a million barrels, or 3 percent, larger than a year ago, and those of heavy fuel oil are 7½ millions (7.7 percent) smaller. Crude oil stocks are 8½ millions (3.7 percent) lower than a year ago at about 252,000,000.

Crude Oil Production in the United States Higher

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	[1]OPC Allocation in February	PRODUCTION IN WEEK ENDED Feb. 14	Feb. 21
Arkansas	[2]74,500	74,500	74,150
California	[3]632,300	661,700	655,600
Long Beach	.....	38,000	37,100
Midway-Sunset	.....	57,800	49,300
Kettleman Hills	.....	32,300	33,100
Wilmington	.....	84,200	91,200
Rest of State	.....	449,400	444,900
Colorado	6,500	6,500	6,550
Illinois	371,800	339,750	347,550
Salem	.....	46,250	46,200
Louden	.....	55,300	56,000
Other New Pools	.....	226,350	233,750
Old Pools	.....	11,850	11,600
Indiana	17,200	20,900	17,550
Kansas	[2]251,700	249,900	247,100
Kentucky	12,500	10,300	10,350
Louisiana	[4]335,000	357,750	353,350
North	.....	80,850	80,200
South	.....	276,900	273,150
Michigan	[2]47,000	53,250	52,600
Mississippi	57,400	87,750	89,650
Missouri	.....	125	125
Montana	20,400	20,800	21,600
Nebraska	5,200	4,700	4,450
New Mexico	[2]119,300	121,400	120,650
New York	14,700	12,500	12,800
Ohio	9,000	7,800	12,300
Oklahoma	[2]395,300	393,000	396,750
Oklahoma City	.....	69,600	76,400
Seminole Area	.....	105,600	103,900
Rest of State	.....	217,800	216,450
Pennsylvania	48,000	47,000	50,950
Tennessee	.....	30	30
Texas	[5]1,596,000	1,504,250	1,515,600
Upper Gulf Coast	.....	296,950	298,150
East Texas Field	.....	368,400	369,050
Rest of Eastern States	.....	89,900	91,000
Lower Gulf Coast	.....	123,050	126,400
Southwest Texas	.....	74,900	73,950
South Central Texas	.....	22,050	22,050
West Texas	.....	299,900	298,850
North Texas	.....	146,000	149,000
Panhandle	.....	83,100	87,150
Utah	.....	15	15
West Virginia	10,000	8,700	9,500
Wyoming	78,000	88,900	89,100
Total United States	4,101,800	4,071,520	4,088,320

[1] Production rate recommended for states by Office of Petroleum Coordinator, on basis of Bureau of Mines forecast of the nation's daily average requirements for domestic crude during month.

[2] OPC allocation adopted by state conservation authorities as allowable production.

[3] OPC allocation also represents allowable production, the state quota being distributed among fields by Conservation Committee of California Oil Producers, acting under OPC supervision.

[4] Louisiana Department of Conservation set allowable at 344,955 barrels daily for February.

[5] Under Texas Railroad Commission proration order for February, actual production in Texas was expected to average 1,543,739 barrels daily at beginning of month, allowing for usual underproduction of 3½ percent below net allowable, which was figured at 1,606,389 barrels daily as of February 1. However, allowable normally increases as new wells are completed, and actual daily average production for month may be expected to be slightly greater than average as calculated for February 1. Under February order, most Texas fields were ordered shut down February 4, 8, 14, 15, 21, 22, and 28.

Markets Tight in East; Irregular in Southwest

Markets were irregular last week, and prices declined in some instances. Natural gasoline prices further sagged, grade 26-70 having been offered f.o.b. Breckenridge for as low as 2 cents a gallon, although sales were not made below 2¾ cents f.o.b. Group Three.

The softness of natural gasoline was attributed primarily to the interference of war developments with shipments of motor fuel from the Southwest to the East Coast.

On the Gulf Coast, the markets have continued quiet, with few inquiries and with quotations generally unchanged.

In East Texas, there were reports that tank car shipments were increasing.

The situation on the East Coast continued the opposite of that on the Gulf Coast, with demand for all products strong and supplies generally available only to regular accounts, although quotations remained unchanged.

All grades of fuel oil were exceptionally strong in the district. Other products also were firm in that region.

In the Middle West, most products were in good demand, although gasoline was not as strong as in some other districts. Bad weather apparently was largely responsible, but it was believed that the shortage of tires also was cutting into consumption of motor fuel. On the other hand, a steadying influence on the Mid-Western market was a pronounced stepping up of shipments of all products to the East Coast.

Mid-Continent refiners noted particularly strong demand for heavy fuel oils, and shipments of light fuel oils also

were brisk. Gasoline remained only in fair demand, but offerings of low-priced material were reported on the decline.

Texas-New Mexico Line Prorating Takings

Pipe-line proration was applied to additional fields in West Texas and Southeastern New Mexico on February 19 when the four owners of The Texas-New Mexico Pipe Line Company curtailed takings to 75 percent of the allowable until further notice. Restrictions apply to about 70,000 barrels daily that have been handled for the account of The Texas Company, Sinclair Prairie Oil Marketing Company, Tide Water Associated Oil Company and Cities Service Oil Company. These absorb about 50,000 barrels daily, or nearly half of the oil produced in Eddy and Lea counties, New Mexico, where back allowable is permitted to accumulate until a market is available.

Stocks have been backing up in the Texas-New Mexico Pipe Line Company's system for some months, and the company has been using leased tanks recently so as to forestall pipe line proration. Reduced runs apply to about 6000 barrels produced daily in the Slaughter field by The Texas Company but delivered to another purchaser on exchange agreement, and also Sinclair Prairie's production in Ector and Andrews counties, although the latter is gathered by Humble Pipe Line Company.

Atlantic Pipe Line Company was the first to institute pipe-line proration in West Texas and Lea County, having curbed its takings to 77½ percent of allowable effective February 10. Reports were current that Humble Pipe Line Company would adopt restricted purchasing policy immediately.

South Texas Committee Names Three Fields

William H. Spice, chairman of the nomenclature committee of the South Texas Geological Society, has announced the names for three new fields in Southern portion of Texas. They follow:

Jones, in Agua Nueva Agajo grant, Jim Hogg county, opened by Sun Oil Company's A. C. Jones 1, a gas well; Penitas, Los Ejidos grant, Hidalgo County, opened by Arkansas Fuel Oil Company's J. W. Heard 1, condensate well; North Sun, Starr County, opened by Sun Oil Company's Montalvo 1-C, an oil well.

Kansas Proration Hearing At Wichita, February 24

The Kansas market demand hearing to set production allowables for March will be held February 24 at Wichita.

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines' basis, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1939:						
February 18	3,324,300	[6]3,125,000	271,252,000	83,075,000	23,747,000	111,349,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[2]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[1]1,600,800	3,475,000	246,982,000	73,475,000	37,722,000	[2]116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	[2]39,562,000	114,786,000
1940:						
January 6	3,584,450	[6]3,370,000	238,581,000	82,002,000	32,183,000	105,247,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	[6]102,344,000
March 16	[2]3,890,050	3,500,000	246,762,000	100,616,000	24,075,000	103,558,000
April 6	3,745,000	3,455,000	251,897,000	101,690,000	[6]23,551,000	105,099,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
September 14	3,647,400	3,580,000	262,475,000	83,300,000	46,648,000	[2]109,135,000
October 19	3,667,550	3,525,000	262,098,000	81,656,000	[2]49,051,000	108,141,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	[6]3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
1941:						
January 4	3,367,200	3,600,000	260,643,000	85,053,000	42,403,000	[2]102,448,000
January 11	[6]3,364,450	3,565,000	259,342,000	86,328,000	41,094,000	102,281,000
January 18	3,611,900	[6]3,490,000	259,934,000	87,351,000	39,920,000	101,213,000
March 29	3,746,550	3,625,000	[2]266,187,000	[2]99,727,000	29,949,000	96,152,000
April 12	3,603,650	3,630,000	265,160,000	98,654,000	[6]28,381,000	95,471,000
July 5	3,658,200	3,745,000	258,070,000	90,064,000	36,925,000	[6]92,635,000
October 4	3,860,750	4,015,000	246,144,000	[6]80,870,000	49,553,000	96,016,000
October 18	4,110,550	[4]4,120,000	243,605,000	82,584,000	52,403,000	95,800,000
November 15	4,086,850	4,010,000	[6]240,399,000	83,412,000	[2]54,983,000	95,993,000
1942:						
January 3	4,038,000	3,961,000	244,440,000	92,987,000	49,357,000	95,857,000
January 10	4,229,150	3,891,000	244,364,000	94,204,000	47,250,000	94,885,000
January 17	4,045,600	3,723,000	246,267,000	95,617,000	43,984,000	92,703,000
January 24	4,311,300	3,885,000	248,164,000	96,363,000	41,863,000	92,079,000
January 31	3,871,350	3,848,000	250,740,000	97,810,000	40,674,000	91,189,000
February 7	[4]3,336,900	3,853,000	252,366,000	100,224,000	40,038,000	90,859,000
February 14, 1942	**4,078,500**	**3,772,000**	.....	**101,796,000**	**37,512,000**	**89,955,000**
February 14, 1941	3,638,100	3,606,000	[4]260,948,000	93,801,000	36,482,000	97,479,000
Amount Change:						
From Week Ago	—258,400	—81,000	[8]+1,626,000	+1,572,000	—2,526,000	—904,000
From Year Ago	+440,400	+166,000	—8,582,000	+7,995,000	+1,030,000	—7,524,000
Percent Change From Year Ago	+12.1	+4.6	—3.7	+8.5	+2.8	—7.7

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, February 15, 1941.
[6] Lowest since October, 1922, due to shut down of six Mid-Continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] Latest weekly change.

Income From Prorated Wells

[*Continued from page 20*]

335 wells yielding 72,550 barrels daily.

The importance of the price of crude as a factor in determining the income from the prorated well was demonstrated in the experience of recent years. On January 1, 1938, with the average well allowable in the 8 prorated states at 39 barrels daily and with the average price of the crude produced in those states at $1.14 a barrel, the income from the average prorated well was $44.46 a day. A year later, January 1, 1939, the average allowable had been pulled down through completion of new wells to 32 barrels daily, an 18 percent reduction, but the income from the average prorated well was down 28 percent, to $31.70 daily, in reflection of the decrease of the average price of prorated crude production from $1.14 to $1.00 a barrel. Another year later, on January 1, 1940, the income from the prorated well remained virtually unchanged at $31.60 daily, with both allowable and price unaltered. Finally, a year ago, on January 1, 1941, the income from the average prorated well hit a low of $28.12, with the price down a little more, to 99 cents, and with the average well allowable down to 28 barrels daily. In April and May of 1941, increases of approximately 5 and 10 cents, respectively, brought the average price of prorated crude production up to $1.15 a barrel, where it still remains; and at the beginning of this year, the average allowable per well for the 8 prorated states was 32 barrels daily, and the income from the allowed production was $36.80 per well per day.

Increase of the income from the average prorated well from the $36.80 daily as of January 1, this year, back to the $48.15 that was earned on January 1, 1937, would involve an improvement of $11.35, or 31 percent.

And if this increase in the daily income from the prorated well, back to the 1937 level, occurred wholly through the advance of crude prices, there would be necessary an increase in the average posting by 31 percent, or 35½ cents a barrel.

On the basis of the average allowable as of January 1 this year, in other words, the income from the average prorated well could be restored to the 1937-1938 level only

through the raising of the price of crude from its presently pegged level of $1.15 to $1.50 a barrel.

Even then, the net income to the operator would not be back to 1937-1938 proportions, because of the present higher taxes and higher costs of materials and labor.

Bureau Reports December Drop in Refinery Runs

Daily average crude runs to stills in December dropped 19,000 barrels below the November level, but at 4,032,000 barrels were 493,000 barrels higher than in December, 1940, it is shown by the monthly report of the Bureau of Mines.

The bureau said that receipts of oil at refineries in the final 1941 month were 119,985,000 barrels while crude runs to stills were 124,985,000 barrels and fuel and losses 146,000 barrels, with the result that stocks declined from 49,301,000 to 48,736,000 barrels.

Total crude runs for the year were 1,409,192,000 barrels, an increase of 114,909,000 barrels over 1940, it was stated.

Economics Committee Named by War Council

Formation of committees which will keep the Industry War Council constantly informed of changing economic conditions resulting from wartime activities, was announced February 20 by Chairman William R. Boyd, Jr. A standing committee on petroleum economics has been set up, consisting of Dr. Robert E. Wilson, president of Pan American Petroleum & Transport Company, chairman; William S. Farish, president of Standard Oil Company (New Jersey); William H. Ferguson, executive vice president of Continental Oil Company; A. Jacobsen, president of Amerada Petroleum Corporation; A. C. Mattee, president of Honolulu Oil Company; J. Howard Pew, president of Sun Oil Company, and Charles F. Roeser, president of Roeser & Pendleton, Inc.

Fred Van Covern of the American Petroleum Institute, will serve as secretary of the committee, and Dr. Joseph E. Pogue, vice president of Chase National Bank, has been asked to serve as an economic adviser.

A working subcommittee has been formed with Stewart Coleman, Standard Oil Company (New Jersey), as chairman, and Fred Van Covern as secretary, members of which are: Harold B. Fell, Independent Petroleum Association; R. G. Gonzales, Humble Oil & Refining Company; Edward T. Knight, The Atlantic Refining Company; Albert J. McIntosh, Socony-Vacuum Oil Company; J. M. Sands, Phillips Petroleum Company; Sidney V. Swensrud, Standard Oil Company (Ohio); Clarel B. Mapes, Mid-Continent Oil & Gas Association, and Earl W. Wagy, Standard Oil Company of California.

The purpose of the committee is to study and report monthly to the council recommendations as to sound economic policy for the industry under the impact of war needs and shortages, and to endeavor to foresee and point out important future trends and problems with which the industry and OPC will be compelled to deal, Boyd explained.

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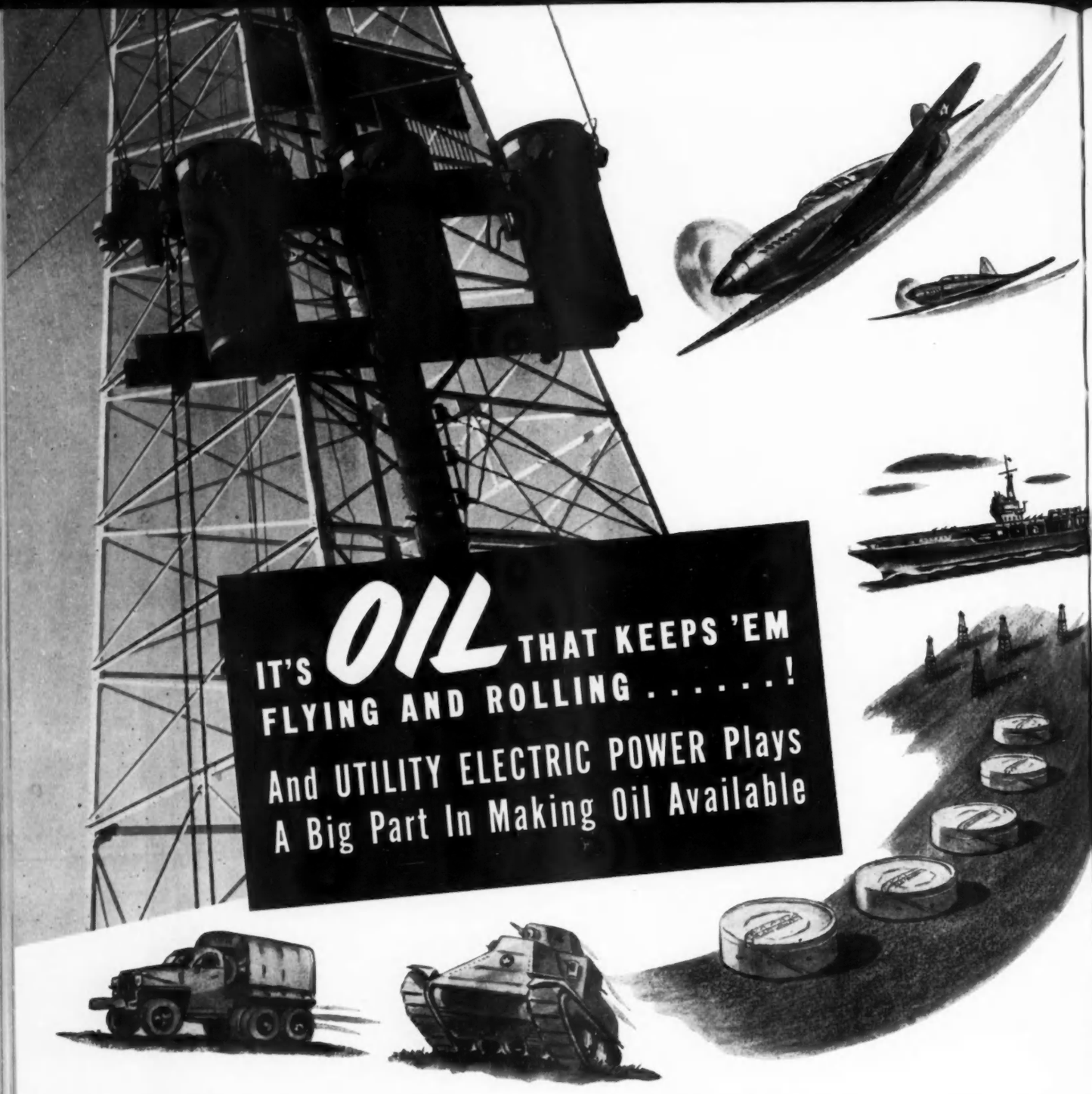

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U. S. Field Operations

Illinois

Clay County Wildcat 28 Barrels Hour on Test

Clay County wildcat flows on drill-stem test of McClosky; Bethel sand pool opener in White County near.

Clay County: Cameron Oil Co.'s Landwehr 1, NW NW NE 8-5n-7e, set 5½-in at 2807 ft following drill-stem test of McClosky which flowed 28 bbls hour after 16 min; saturation is at 2804-16 ft and bottom-hole was 1250 pounds; Cypress at 2505-25 ft showed 240 ft of oil- and gas-cut mud in drill-stem test open 30 minutes with packer at 2505 ft. Elev is 532 ft, Glen Dean 2306, Weiler 2501 and Aux Vases 2717 ft.

White County: Carter Oil Co.'s Marlin 1, SW NW 35-6s-9e, swabbed 116 bbls oil, 23 bbls water in 20 hrs from Bethel at 2797-2810 ft after plugback from McClosky which tested oil and water. Opens field 1½ miles south of Storms pool.

COMPLETIONS

Clay County: Wildcat—Gulf's Hastings 1, c ne se 23-4n-7e, abnd 2648 ft.

Edwards County—Central P. L. Co.'s Ridgley 1, c e½ nw se 31-2n-14w, McC. 3109-18 ft, td 3118 ft, 500 bbls. A. F. Dye's Tull et al 1, c e½ se se 13-1n-10e, abnd 3302 ft.

Franklin County—A. W. Torbett's Biggs 1, nw sw ne 1-6s-2e, Pt. Crk. 2605-2610 ft, td 2889 ft, 87 bbls.

Hamilton County—Shell's Crabtree 7, sw sw sw 13-6s-5e, A. V. 3097-3134 ft, McC. 3278-90 ft, 3308-24 ft, L. O'H. 3170-98 ft, td 3353 ft, 440 bbls. Gulf's Clark 1, se ne nw 14-6s-5e, A. V. 3152-58 ft, L. O'H. 3228-3237 ft, td 3259 ft. 74 bbls. Shell's Crabtree B 5, ne nw nw 24-6s-5e, A. V. 3076-3100 ft, L. O'H. 3152-76 ft, 3220-30 ft, 3244-64 ft, McC. 3292-3318 ft, 3326-34 ft, td 3338 ft, 440 bbls. Shell's Lockwood C 1, nw ne nw 24-6s-5e, L. O'H. 3167-92 ft, 3258-78 ft, McC. 3314-3334 ft, td 3361 ft, 630 bbls. Carter's Hale 4, sw se ne 1-6s-6e, abnd 3042 ft. Texas' Johnson 1, nw sw nw 18-6s-6e, L. O'H. 3248-55 ft, 7480 ft, A. V. 3170-84 ft, McC. 3363-73 ft, td 3380 ft, 640 bbls; Irvin 6, n½ sw sw nw 26-6s-6e, A. V. 3082-3100 ft, td 3100 ft, 164 bbls; Hall 2, w½ se nw 27-6s-6e, A. V. 3056-66 ft, 70-98 ft, td 3098 ft, 240 bbls; Clark 1, sw sw nw 8-6s-7e, A. V. 2983-99 ft, 3011-29 ft, td 3031 ft, 64 bbls; Texas' Clark 2, nw sw nw 8-6s-7e, A. V. 2970-78 ft, 83-88 ft, 3005-3028 ft, td 3031 ft, 284 bbls.

Jackson County: Wildcat—H. A. Hoffman's Bowlin 1, e½ se se ne 12-7s-2w, abnd 1595 ft.

Jasper County—Shulman Bros.' Acklin 2, nw nw se 5-6n-10e, McC. 2772-76 ft, 85-88 ft, td 2802 ft, 100 bbls.

Jefferson County: Wildcat — Cherry & Kidd's Giordane 1, nw sw se 33-1s-1e, abnd 2402 ft. Magnolia's Riddle Bros. 1, ne se sw 8-3s-1e, abnd 3860 ft.

Marion County: Wildcat—N. W. Whitten's Fyke 1, c sw ne 32-2n-1e, Petro. 647-94 ft, td 694 ft, 10 bbls.

Richland County: Wildcats—Zephyr Drlg. Co.'s Simpson-Poff 1, c w½ nw sw 30-2n-11e, abnd 3365 ft. D. Goodson & Martin's Taylor 1, c n½ nw nw 33-3n-9e, abnd 3115 ft.

Wayne County—Olson Drlg. Co.'s State B 2, c e½ sw sw 36-1n-6e. McC. 3111-17 ft, td 3389 ft, 4 bbls. Ohio Fuel's Hill 1, c s½ se ne 2-2s-7e, L. O'H. 3238-48 ft, McC. 3298-3307 ft, td 3324 ft, 432 bbls. Gulf's Shehorn B 4, se sw ne 3-1s-6e, td 1795 ft, salt water disp. H. Fortiades' Withrow 2, c n½ ne nw 28-1s-6e, A. V. 3040-64 ft, td 3064 ft, 150 bbls. Texas' Talbert 5, e½ ne sw 28-1s-6e, A. V. 3014-33 ft, McC. 3143-48 ft, td 3266 ft, 100 bbls. Reward Oil Co.'s Duke 1, ne nw se 29-2s-6e, abnd 3220 ft.

White County—Southern Petro. Co.'s McIntosh 2, nw nw se 30-3s-8e, A. V. 3193-3224 ft, td 3224 ft, 250 bbls. Mabee O. & G.'s Smith 11, se ne se sw 4-4s-14w, Beth. 2700-33 ft, td 2733 ft, 35 bbls. Tidewater's Evans 11, se sw nw 4-4s-14w, Beth. 2672-84 ft, A. V. 2789 ft, td 2965 ft, 65 bbls. W. C. McBride, Inc.'s Daly Tr. 2, se sw sw 7-4s-10e, McC. 3224-29 ft, td 3229 ft, 792 bbls. Tidewater's Bacon 9, nw se ne 5-5s-14w, Beth. 2744-60 ft, A. V. 2857-2868 ft, td 2880 ft, 120 bbls. National Petro.'s McQueen 5, ne nw sw 32-5s-10e, Clore 2092-2101 ft, td 2111 ft, 46 bbls. Sinc.-Wyo.'s Ackermann 1, se sw sw 13-6s-10e, Cyp. 25-68-78 ft, 83-94 ft, Palestine 2019-24 ft, td 3007 ft, 20 bbls oil. Magnolia's Gen. Amer. 2, nw sw sw 1-7s-8e, Walts. 2201-18 ft, Pt. Crk. 2751-63 ft, td 2774 ft, 310 bbls; Gen. Amer. 3, se sw sw 1-7s-8e, Walts. 2196-2211 ft, A. V. 2921-30 ft, td 2935 ft, 200 bbls. Cities Service's Mount 8, se ne nw 12-7s-8e, Walts. 2188-2202 ft, td 2918 ft, 135 bbls.

OLD WELLS DEEPENED

Fayette County—Carter's McCormick 5, se nw se 18-7n-3e, Pt. Crk. 1576-86 ft, otd 1583 ft, td 1602 ft, 45 bbls; Rhodes 1, nw ne se 27-8n-3e, Stray 1541-65 ft, Beth. 1572-1579 ft, otd 1568 ft, td 1579 ft, 33 bbls.

Gallatin County—Carter's Rister 3, nw se nw 4-8s-8e, TS. 1913-40 ft, Palestine 1699-1707 ft, otd 1724 ft, td 1940 ft, 54 bbls.

WILDCAT STARTS

Bond County—J. B. Bushnell's Newland 1, 42 ft n of c w½ nw ne 4-4n-4w, dr.

Clay County—Gulf's Dillman 1, se nw se 25-4n-7e, lcn.

Franklin County—Wright et al's Snyder 1, ne se nw 26-6s-1e, lcn.

Jefferson County—S. C. Yingling's Spangler 1, n½ sw sw 1-2s-1e, lcn.

Lawrence County—W. R. White's Hershey 1, se sw se 27-2n-12w, lcn.

Marion County—N. W. Whitton's Anderson 1, nw ne sw 32-2n-1e, lcn.

Perry County—Blankenship et al's Wyliskalla 1, sw sw se 11-4s-1w, lcn.

Wayne County—Schuller & Lynch's Spencer 1, w½ nw se 2-2s-8e, lcn.

White County—Allen & Stevenson's Ford 1, se se se 12-5s-10e, lcn.

Indiana

Posey County Wildcat Testing Aux Vases Show

Sinclair-Wyoming Oil Co.'s D. G. Nash 1, SW SW NE 32-7s-14w, Posey County, wildcat 6 miles west and 4½ miles south of Mt. Vernon, set casing to test Aux Vases saturation at 2722-32 ft. Hole was bottomed in St. Louis lime at 2910 ft. Casing was set at 2708 ft. Starting at surface elevation of 366 ft, Glen Dean was topped at 2184 ft.

Carter Oil Co. has derrick up for Baker 1, SW NW 9-7s-14w, new wildcat 2½ miles southwest of Mt. Vernon field.

Vanderburgh County: Sells Petroleum Co.'s McCarthy 1, NE SW NW 32-6s-11w, prospective Waltersburg sand pool opener, two miles southwest of Evansville, was being put on pump with a hole full of oil. Same operator's Welborn 1, NE SW 32, 6s-11w, southwest of McCarthy 1, has been abandoned through the Tar Springs at 1826 ft.

COMPLETIONS

Daviess County: Wildcat—Dawson's Wolfenberger 1, c se sw 35-5n-7w, abnd 1000 ft.

Gibson County: Wildcat — Joe Engber's Dugan 1, se se nw 35-2s-9w, Penna Sd. 1067-74 ft, td 1074 ft, 20 bbls.

Harrison County—B. F. Brown's Bennett-Harper 1, sw sw se 31-3s-4e, abnd 860 ft.

Pike County: Wildcat—J. Dawson et al's Erwin 1, se sw nw 16-3s-7w, abnd 1404 ft.

Spencer County: Wildcat—H. H. Vickers' Stewart 1(2) nw sw sw 27-6s-5w, Cyp. 881-888 ft, td 890 ft, 15 bbls.

Kentucky

Henderson County: Rigging up rotary was a new wildcat start seven miles southeast of Henderson, Carter Oil Co.'s Toy 1, 21-P-24.

COMPLETIONS

Henderson County—Farmer & Chenault's Chase 1, 11-Q-26, McC. 1970-78 ft, td 1978 ft, 280 bbls.

Union County—Sun Oil Co.'s McKinney 3, 20-0-18, Mans. 934-54 ft, 1352-65 ft, td 1352 ft, 36 bbls. Sun & Ky. Nat. Gas' Reyburn 4, 20-0-18, abnd 1356 ft.

Oklahoma

Apache Outpost Test Preparing to Abandon

Outpost on Apache trend in Comanche County has slight oil shows, to be plugged; state's deepest test has gas blowout, spray of oil; Sylvan outpost to test Wilcox saturation.

Comanche County: Texas Co.'s Reich 1, NW NW NE 25-4n-11w, west of Elgin, on southern flank of Apache trend, plugged back to 2485 ft from 3493 ft, shot 50 qts, swabbed small amount of oil, shutin overnight, swabbed 5 bbls

Summary of Drilling, Week Ended February 21, 1942

	WELLS COMPLETED						
	Completions	Oil Wells	Gas Wells	Failures	†Miscellaneous	Total 1942	Total this Date 1941
Alabama	....	....	....	....	....	2	....
Arkansas	2	....	....	2	....	18	22
California	17	15	....	2	....	159	175
Colorado	....	....	....	....	....	2	....
Georgia	....	....	....	....	....	1	....
Illinois	39	26	....	9	4	485	434
Indiana	5	2	....	3	....	66	70
Kansas	36	17	1	17	1	312	277
Kentucky	3	2	....	1	....	33	47
Louisiana	19	12	1	6	....	182	210
Michigan	15	7	1	7	....	127	115
Mississippi	....	....	....	....	....	30	22
Missouri	....	....	....	....	....	2	11
Montana	5	5	....	....	....	28	33
Nebraska	1	....	....	1	....	8	18
New Mexico	5	2	....	2	1	59	51
New York	24	11	....	....	13	213	95
Ohio	32	7	17	7	1	249	220
Oklahoma	40	16	7	15	2	320	272
Pennsylvania	50	....	8	....	42	417	511
Tennessee	....	....	....	....	....	1	3
Texas	131	88	6	29	8	1,362	1,282
West Virginia	23	3	13	6	1	126	115
Wyoming	2	1	....	1	....	12	14
Total this week	449	214	54	108	73	4,214	3,997
Total last week	499	285	45	132	37	3,765	3,527
Total this year	4,214	2,461	354	964	435	....	....

† Includes old wells deepened, water-intake, gas input, and salt water disposal wells.

fresh water and 2 bbls oil, to plug and abandon.

Caddo County: Denver Producing and Refining Co.'s Sah-Cam 1, C SE SE 33-10-10w, near Binger, deepest test in state, drilled to 13,842 ft, perforated, gas blowout of unestimated rate.

Seminole County: Stanolind et al's Grisso 1, NW SW NE 11-10n-7e, outpost to the new Sylvan area, topped Wilcox sand 4422 ft, cored 4426-31 ft, recovered hard sand bleeding oil, casing set on sand top for test although sand is hard and tight.

COMPLETIONS

Caddo County: Cement—Geo. Pace's Walker 2, ne nw nw ne 1-5n-10w, sand 3480 ft, td 3487 ft, pb 3445 ft, abnd.

Caddo County: West Cement — Darby's Loose 3, sw sw se 27-6n-10w, sand 4664-99 ft, sand 4964-94 ft, td 5841 ft, perf, flow 26,029,000 gas, shut in pressure 1625 lbs, open flow 1590 lbs.

Carter County: West Hewitt—Walter Neustadt's Choate 13, sw ne ne se 18-4s-2w, sand 2254-81 ft, td 2300 ft, shot 90 qts, flow 150 bbls.

Creek County: North Bristow—Curtis Oil's Toney 1, ne ne nw 19-17n-8e, Dutcher 2975 ft, abnd 3019 ft.

Creek County: Wildcat—D. B. Malernee's Rountree 1, se nw sw 2-14n-7e, Bartles 3119 ft, gas, Inola 3030 ft, sand 3045 ft, Dug Deeper 3130 ft, 1000 bbls.

Grady County: Chickasha—Sinclair-Prairie's Pooler A-5, c nw ne 22-5n-8w, sand 4284-4325 ft, sand 4375-4423 ft, sand 4471-4500 ft, sand 4686-4742 ft, td 4742 ft, perf 157,192,000 gas, shut in pressure 1805 lbs. Little Nicl Oil's Glover 1A, c ne ne 27-5n-8w, sand 2485-2497 ft, td 2640 ft, perf, 1,500,000 gas, shut in pressure 1040 lbs.

Hughes County: Olympic — P. McIntyre's Peters 1, nw ne sw 11-9n-8e, Wilcox 4410 ft, abnd 4425 ft.

LeFlore County: Unnamed—Western Oklahoma's Redwine 1, c s½ se 21-9n-24e, top sand 5073 ft, td 5227 ft, 10,000,000 gas, 1000 lbs rock pressure, Western Oklahoma Gas' Hinton 1, c ne sw 28-9n-24e, sand 5112 ft, td 5282 ft, 6,000,000 gas, 1000 lbs rock pressure.

Lincoln County: Luffoon — Southwestern's Hoffman 1, nw nw se 15-13n-6e, Hunton 4087 ft, td 4090 ft, acidized 3000 gals, 15,000,000 gas, 800 lbs rock pressure. J. E. Trig et al's Cook 1, se se sw 22-15n-5e, Verdigris 3447 ft, abnd 3495 ft.

McIntosh County: Unnamed — McNutt & Young's Wolfe 1, se c nw 15-12n-17e, sand 2330-32 ft, td 2338 ft, show gas at 1497-1515 ft, abnd.

Osage County: Wildhorse—Trinity Oil's 2, nw ne se 15-22n-10e, sand 1798-1815 ft td, abnd 1825 ft.

Osage County: Hominy—Gulf & Continental's 2, nw nw ne 16-23n-7e, Hominy 2942 ft, td 3024 ft, shot 30 qts, 1500 gals acid, pump 115 bbls.

Pittsburg County: Canadian—J. E. Weible's Smith 3, nw se sw se 32-9n-16e, abnd 605 ft.

Pontotoc County: South Francis — L&L's McCool 2, ne nw se 6-4n-7e, sand 1517-1522 ft, td 1600 ft, 200,000 gas, abnd.

Pontotoc County: Allen — Mary F. Oil's Shields 13, nw c ne ne 33-5n-8e, Base of Allen, 716 ft, abnd 933 ft.

Pontotoc County: Ada — Hughes et al's Thomas Smythe 1, ne nw se 30-4n-6e, Cromwell 1524 ft, abnd 1579 ft.

Pottawatomie County: St. Louis—Amerada's Peters 2, ne nw sw 27-8n-4e, Hunton 3839 ft, td 3889 ft, swab & flow 571 bbls. Sinclair Prairie's Rice A-4, nw sw ne 17-7n-4e, Dolomite 4022 ft, td 4046 ft, acidized 3000 gals, pump 245 bbls.

Pottawatomie County: N. Bebee — Champlin's Walker 2, nw nw nw 16-5n-5e, Sylvan 2537 ft, abnd 2550 ft.

Pottawatomie County: Hotulke — Alma's Harrington 2, c ne nw 24-9n-4e, Hunton 4170 ft, td 4220 ft, 3000 gals acid, flow 256 bbls. Big Chief et al's Kissinger 1, nw sw sw 25-9n-4e, Hunton 4195 ft, td 4224 ft, pb 4217 ft, shot 30 qts, 4000 gals acid, pump 56 bbls oil 25 bbls water. W. O. Allen's Webber 2, nw ne ne 27-9n-4e, Viola 4334 ft, td 4445 ft, perf, 10,000 gals acid, pump 400 bbls oil and 100 bbls water. Mid-States' Nedeau 1, 60 ft n of c nw ne 25-9n-4e, Hunton 4110 ft, td 4476 ft, pb 4186 ft, perf 1500 gals acid, flow 176 bbls.

Seminole County: Sasakwa—Eason & Grisso's Harris 1, n 110 ft, s of se se ne 12-6n-7e, Calvin 1111-27 ft, 2nd Calvin 1181-97 ft, td 1197 ft, shot with 34 qts, pump 5 bbls oil in 6 hrs.

Seminole County: Fish — Helmerich & Payne's Ryan 1, se se sw 6-6n-8e, 2nd Calvin 1224 ft, td 1330 ft, shot 14 qts, pump 108 bbls oil.

Seminole County:—Eason & Grisso's Bryant 3, sw c nw 7-6n-8e, 2nd Calvin 1215 ft, td 1271 ft, swabbed 8 bbls oil 58 bbls water, abnd.

Seminole County: Wildcats—Kerlyn's Klabzuba 1, se sw se 18-11n-7e, Hogs 1505 ft, ccb 1820 ft, Oswego 2605 ft, Brn lime 3745 ft, Booch 3850-70 ft, Coal 3915-3920 ft, Glic 2923 ft, unconformity sand 3980-91 ft, slight stain, Crom 4005 ft, no show, Pitkin 4055 ft, Mayes 4420 ft, Wd 4500 ft, Misener 4536 ft, s l st, Hunton 4538 ft, cored 4540-57 ft, 4 ft lime with some porosity and s l stain in spots, open 34 min, 300 ft salt water, 1st Wx 4813 ft, abnd 4831 ft. C. A. Palmer et al's Humphrey 1, sw nw ne 15-6n-5e, Senora lime 2648-52 ft, Upper Allen 2675 ft, no show oil, lower Allen 2862-42 ft, Earlsboro 2905-15 ft, brown lime 3060 ft, Dutcher 3097 ft, Fayetter 3210 ft, td 3230 ft, shot 100 qts 2830-39 ft, pump 20 bbls. E. N. Jordan et al's Jackson et al, se sw ne 20-6n-5e, Calvin 2514 ft, abnd 2893 ft.

Stephens County: Woolsey—Fair Operating Co.'s "B" 1A, se c nw ne 35-2s-6w, pay 1783-1805 ft, Arb lime 1771 ft, td 1805 ft, 500 gals acid, flow 500 bbls. Fair Operation Co.'s Baker 3A, se nw sw ne 35-2s-6w, top of sand 1830-40 ft, td 1851 ft, pump 50 bbls.

Stephens County: Doyle—Cox & Harmon's Barnes 1, nw nw ne 13-1n-5w, sandy shale 5947-6003 ft, sand 6070-90 ft, sand 6215-51 ft, td 6303 ft, shot with 304 qts ran 376 ft of 4 in perf liner on bottom, flow 169 bbls

Stephens County: Empire—Fair Operating's Baker 2, ne sw ne 35-2s-6w, top lime 1825-28 ft, td 1840 ft, pump 15 bbls. L. W. Winkler et al's Clark 1, ne sw sw 36-2s-6w, lime 1832-93 ft, abnd 1897 ft.

Tulsa County: Glenn—T. E. Turner's Hagie 3A, se ne ne 11-16n-12e, Woodford 2327 ft, abnd 2417 ft.

OLD WELLS DEEPENED

Oklahoma County: Oklahoma City—British American's McNabb 2, nw se se ne 22-12n-3w, otd 6488 ft, Wilcox prod, pay 6477-6501 ft, shot 60 qts, pump 60 bbls oil and 75 bbls water.

Pottawatomie County: St. Louis — Alma's Rodd 1, nw nw se 32-7n-5e, otd 4067 ft, td 4173 ft, sandy Dolo 4170 ft, abnd.

Seminole County: Seminole City — Lee Wood's Fixico 1A, 60 ft s of c se ne 29-9n-6e, otd 3995 ft, Wilcox 4174 ft, td 4194 ft, pb 4174 ft, pump 4½ bbls.

FIRST REPORTS

Marshall County—Samedan Oil Co.'s Godfrey 1, c ne ne sw 13-6s-6e, lcn.

Tillman County — Culham Petroleum Co.'s Stone 1, c ne ne ne 4-3s-17w, dr.

Kansas

New Pool Prospect In Marion County

New pool looms for Marion County; Patterson pool prospects dim as north offset fails; Stafford County wildcat to test saturation.

Marion County: Veeder Supply Co.'s Williams 1, CN½ NW SW 35-17s-4e, 2½ mi south of Lost Springs pool, drilled to 3382 ft in Mississippi lime, had 1400 ft oil in hole, swabbed down and tested 5 bbls oil per hr, waiting on tanks for further test, may open new producing area.

Kearny County: Stanolind's Patterson 2, CE½ NW NE 26-22s-38w, north offset to the discovery well of the new Patterson pool, will be abandoned at 4954 ft in Mississippi lime. Patterson 1 was rated for over 4000 bbls; the east offset for more than 450 bbls and the south offset is uncompleted after failing to find production in the Patterson sand, pay horizon of the two producers.

COMPLETIONS

Barber County: Wildcat—Pryor & Lockhart et al's Riepe 1, sw sw se 13-31s-14w, Anhy. 545 ft, Ft. Riley 1955 ft, Topeka 2820 ft, Lansing 3737 ft, cored 4160-78 ft, no show, Miss. 4258 ft, Base Miss. 4289 ft, Viola 4341 ft, Simpson 4477 ft, cored 4494-4512 ft, sand & shale, no show, Arbuckle 4570-86½ ft td, abnd.

Barton County: Beaver—Bay Pet.'s Riemann 1, nw nw se 22-16s-12w, Arbuckle 3355 ft, td 3370 ft, shot 12 qts, pump 250 bbls.

Barton County: Wildcat—Simpson's Reif 1, c w½ sw nw 1-17s-13w, Arb. 3367 ft, abnd 3409 ft.

Barton County: Ainsworth—Vernon et al's Pelz 1, 10 ft s of nw sw nw 4-17s-13w, Arb. 3373 ft, abnd 3394 ft.

Barton County: West Silica—Frank Hollow's Scheufler 2, ne ne ne 19-20s-11w, Arb. 3310 ft, td 3344 ft, 2500 gals acid, pump 75 bbls.

Barton County: Wildcat — Helmerich & Payne's Teichman 1, c e½ se ne 12-20s-13w, Anhy, 680 ft, Topeka 2880 ft, Lansing 3211 ft, Congl. 3441, Arb. 3470 ft, cored 3475-80 ft, abnd 3511 ft.

Butler County: Potwin—Ralph Wixon's Dohren 6, c e½ ne ne 11-25s-3e, Miss. Lime 2645 ft, td 2685 ft, 3500 gals acid, pump 10 bbls.

Butler County: El Dorado—Cities Service's Wilson 212, nw ne sw 8-25s-5e, Burlingame 819 ft, td 859 ft, shot 40 qts, pump 8 bbls.

Butler County: Burgess—Adair & Morton's Cannon 5, se sw nw 15-28s-7e, Simpson 3084 ft, abnd 3090 ft.

Chase County: Wildcat—Aladdin et al's Drummell 1, se se sw 15-20s-7e, granite 2325 ft, abnd 2409 ft.

Dickinson County: Wildcat—Nelson Drlg.'s Will 1, se se ne 8-16s-4e, Lansing 1880 ft, Miss. 2212 ft, show oil 2212-20 ft, abnd 2233 ft.

Ellis County: Bemis—Cities Service's Callahan B 11, ne sw sw 25-11s-17w, Arb. 3517 ft, td 3575 ft, pb 3560 ft, 3000 gals acid, pump 451 bbls.

Ellsworth County: Wilkens — Herndon Drlg's Kruse 1, c w½ sw nw 20-17s-9w, Arb. 3236 ft, td 3239 ft, 500 gals acid, potential 2889 bbls.

Jefferson County: McLouth—Ray Anderson's McLeod 2, c nw nw 29-9s-20e, McLouth 1466 ft, td 1473 ft, pb 1469 ft, 1.5 mil gas. Hatcher & Fish's Black 1, c ne se 30-9s-20e, Miss. lime 1516 ft, abnd 1687 ft. Gordon-Pool et al's Knudson 2, c ne nw 33-9s-20e, Miss. lime 1461 ft, abnd 1606 ft. Sherrod's Benne 1, nw nw ne 8-20s-20e, abnd 450 ft. Williams & Hicks' Hobart-Herries 1, ne nw ne 8-10s-20e, abnd 516 ft.

Ness County: Aldrich—Continental's Olson 2, sw ne se 5-18s-25w, Miss. lime 4306 ft, abnd 4344 ft.

Phillips County: Friebus—Carter's Garber 1, c nw sw 36-2s-19w, Lansing 3128 ft, td 3323 ft, 11,000 gals acid, potential 2064 bbls.

Reno County: Peace Creek—Cities Service's Krerie D 2, ne se sw 21-23s-10w, Viola 3763 ft, td 3777 ft, potential 3000 bbls.

Reno County: Wildcat—Hinkle Oil & Central Pet.'s Schweizer 1, se se nw 31-22s-9w, Ft. Riley 1575 ft, Florence 1673 ft, Wreford 1770 ft, Topeka 2730 ft, Lansing 3200 ft, Congl. 3545 ft, Kinderhook shale 3567 ft, Misener 3675 ft, Viola 3702 ft, Cherty dolo 3721 ft, light satur 3721-23 ft, good satur 3723-25 ft, loaded hole with 2000 water, td 3725 ft, 500 gals acid, potential 774 bbls oil and 31½ bbls water, gravity 42.5.

Rice County: Chase—Derby et al's Emerick 1, c e½ ne sw 19-19s-9w, Arb. 3269 ft, td 3282½ ft, shot 10 qts, 1500 gals acid, pump 45 bbls.

Rice County: Keesling—Bay Pet.'s Dewitt 1, nw nw se 9-20s-9w, Arb. 3238 ft, td 3255 ft, 500 gals acid, 1000 gals Butane, shot 8 qts, 1500 gals acid, pump 544 bbls. Mid-Plains' Nelson 4, c n½ sw nw 12-21s-7w, Miss. Chat 3450 ft, abnd 3458 ft.

Rice County: Wildcat—Ingling & Parker's Christensen 1, c e½ sw sw 26-18s-7w, Lansing 2765 ft, Base K. C. 3093 ft, Sandy Congl. 3158 ft, Cherty Congl. 3192 ft, Kinderhook 3213 ft, Maquoketa 3243 ft, Viola 3371 ft, Simpson 3400 ft, Arbuckle 3460 ft, abnd 3522 ft.

Rooks County: Westhusin—Plainstock et al's Westhusin 3, c e½ se se se 11-9s-17w, Lansing 3154 ft, td 3336 ft, 5000 gals acid, pump 362 bbls oil.

Rooks County: Wildcat—Stanolind's Boller 1, c w½ ne nw 32-8s-16w, Anhy. 1269 ft, Topeka 2840 ft, Lansing 3079 ft, show oil, 3104-07 ft, Congl. 3432 ft, Arb. 3441 ft, cored 3447-55 ft, abnd 3565 ft.

Russell County: Hall-Gurney—J. J. Hall's Miller 6, ne sw nw 31-14s-13w, Gorham 3123 ft, td 3131 ft, depthograph 1250 bbls.

Russell County: Gorham—N. Appleman's Rouback B 3, c e½ ne se 15-14s-15w, Gorham 3221 ft, td 3224 ft, pump 248 bbls.

Russell County: Greenvale—Cities Service's Schartz 4, c s½ ne ne 5-15s-12w, Gorham 3182 ft, td 3189 ft, potential 785 bbls oil, 97 bbls water.

Russell County: Anschutz—Central Pet.'s Anschutz 1, sw nw nw 10-15s-13w, Lansing 3033 ft, td 3081 ft, 5000 gals acid, potential 3000 bbls.

Russell County: Wildcat—B. & R. Drlg. et al's Homer Ira 1, ne ne se 13-12s-11w, Anhy 415 ft, Ft. Riley 1540 ft, Florence 1640 ft, Wreford 1720 ft, Topeka 2620 ft, Lansing 3041 ft, Cherty Congl, 3324 ft, satur 3357-65 ft, Simp. shale 3368 ft, Simp sd 3369 ft, cored 3373-83 ft, sat. sand, Arb. 3413-26 ft, 3426 td, no show, pb 3370 ft, 30 holes 3358-64 ft, 50 gals acid, 1900 ft, water in hole, abnd.

Stafford County: Beford—British American's Meyer 6, se se ne 28-23s-12w, Arb. 3819 ft, td 3843 ft, potential 3000 bbls.

Stafford County: Stafford—Continental's Cooper 1, c n½ nw ne 22-24s-12w, Arb. 4067 ft, td 4084 ft, pb 3885 ft, abnd.

Stafford County: Wildcat—Veeder Supply's Eriksen 1, c s½ se ne 3-22s-11w, Anhy 450 ft, Ft. Riley 1620 ft, Florence 1720 ft, Topeka 2710 ft, Lansing 3171 ft, Base K. C. 3445 ft, Sandy Congl. 3461 ft, Cherty Congl. 3478 ft, Viola 3497 ft, Simpson 3519 ft, Arb. 3581 ft, abnd 3611 ft.

OLD WELLS DEEPENED

Rooks County: Westhusin—Leavell's Baxa 3, c s½ s½ nw 12-9s-17w, otd 3240 ft, Lansing 3130 ft, pay 3299-3305 ft, td 3305 ft, 5000 gals acid, pump 598 bbls.

FIRST REPORTS

Cowley County—Fred Koch's Martin 1, c wp nw ne 17-31s-4e, cellar.

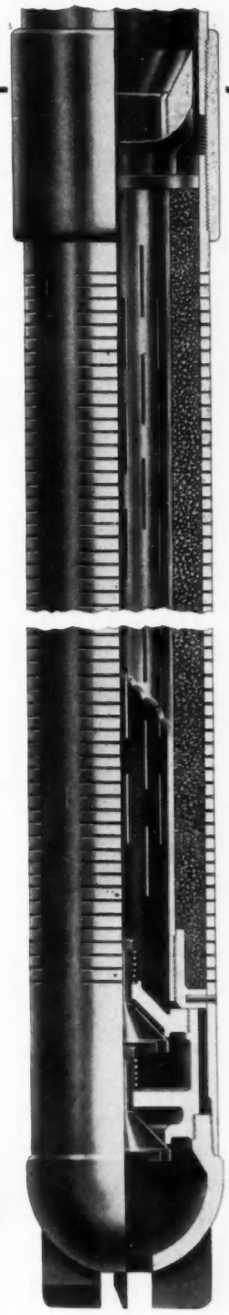
Jefferson County—Ira Keith's Smith 1, c ne ne 3-11s-18e, dr.

Johnson County—W. D. Dunn's Morgan 1, c wp sw nw 6-13s-22e, sd.

Marion County—W. R. Yeager et al's Schmidt 1, sw se nw 2-20s-2e, dr.

KEEPS 'EM FLOWING

LAYNE Hydro-Pak



The Layne Hydro-Pak is the greatest screening element ever put into a well. Specially selected gravel is hydraulically packed between two slotted pipe screens. As the sand laden fluid passes through the countless channels between the gravel, its velocity is lowered, cutting action greatly reduced, and the sand in the fluid prevented from entering the tubing.

There is far less possibility of sanding-up; of sand getting into and damaging the fluid-lifting equipment. Hydro-Pak keeps 'em flowing to help provide the oil that "Keeps 'em Flying."

When you need a pre-packed gravel screen, remember, there is no substitute for HYDRO-PAK.

Layne & Bowler Co.

HOUSTON, TEXAS

Export: E. H. (Gene) Trammel, Room 1636, 30 Rockefeller Plaza, New York

Nebraska

Barada's Tenth Well Promises Extension

Tenth producer for Barada pool showing favorably; Viola lime strike still awaiting cable tools.

Barada: Skelly's Steinbrink 2, C W½ NE NW 36-3n-16e, drilled to 2448 ft in Hunton lime, no top given, had good oil show, ran casing to bottom and was moving in cable tools, tenth producer would extend field location east.

Dawson: Power Oil Co.'s Bohrer 1, C E½ SW NW 10-1n-16e, prospective Viola lime producer in Richardson County, still awaits cable tools to test lime at 2922 ft where favorable oil show was found.

COMPLETIONS

Richardson County—Davisson & Goodne Kauf's Schawang 1, c nw sw 34-3n-16e, Lansing 920 ft, Miss. 2145 ft, Base Miss. 2290 ft, Hunton 2525 ft, abnd 2606 ft.

FIRST REPORTS

Frontier County—Sinclair Prairie's Brown 1, c sw sw 21-5n-29w, rig.

Richardson County—Richco Oil's Dowell 1, sw nw ne 31-2n-15e, otd 2855 ft, Hunton 2648 ft, rigging to work over.

Rocky Mountain Area

Colorado and Wyoming Fields Being Extended

Quarter-mile extensions Wilson Creek, Colorado, and Mahoney Dome, Wyoming, indicated. Sunburst, Montana, gas extension deepening for Madison oil attempt. Deep O'Brien Springs, Wyoming, wildcat fails while Pilot Butte deep test nearing Tensleep.

Wilson Creek: Texas Co. and California Co.'s Unit 8, NW SE NW 26-3n-94w, Rio Blanco County, Colorado, quarter-mile ahead production northeast side Wilson Creek field, appears for successful completion, testing production Sundance with 7-inch cemented 6886 ft, td 6888 ft.

Mahoney Dome: Sinclair Wyoming Oil Co.'s Unit 3-A, C NW NE 34-26n-88w, quarter-mile north proved area, Mahoney Dome, Carbon County, Wyoming, swabbed 30 bbls after 3000 gals acid Tensleep, 4627 ft.

O'Brien Springs: Finding Tensleep hard and tight, Continental abandoned Johnson-Gov't 1, SE SE SW 1-24n-88w, O'Brien Springs, low closure structure, td 5021 ft in quartzitic beds; Tensleep 4944 ft.

Pilot Butte: Superior of California's Tribal 1, SE SW SW 15-3n-1w, topped Embar 5823 ft, drilling at 6065 ft, and nearing Tensleep objective, undrilled in Pilot Butte field, Fremont County, Wyoming. Test cored oil saturation at unreported levels in Embar, but failed to respond on drill stem.

Midway Area: Big West Oil Co.'s State 1, C SE 6-34n-4w, midway between Cut Bank and Kevin-Sunburst Toole County, Montana, which showed 2.5 gas Cut Bank sand, is deepening 2839 ft for oil try Ellis-Madison contact.

MONTANA

COMPLETIONS

Glacier County—Santa Rita Oil & Gas Co.'s Jacobson 3, c se sw 7-33n-5w, cable tools, Cut Bank, elev 3856 ft, pump 150 bbls, Lower Cut Cut Bank 3010-3019 ft, td 3043 ft. Santa Rita's Tribal 16, se nw se 3-36n-6w, cable tools, flow 587 bbls, Sunburst 2975-3014 ft, elev 3973 ft, td 3015 ft.

Toole County—Coolidge & Coolidge's State 9, sw se nw 36-36n-2w, cable tools, Kevin-Sunburst, pump 50 bbls, Sunburst 1562-1605 ft td. Prevol & Shay's Govt 1, c n l sw sw 11-35n-3w, cable tools, pump 25 bbls, Ellis-Madison 1786-90 ft, td 1828 ft. Rimrock Oil Co.'s Schmidt 8, se se nw 29-35n-3w, cable tools, pump 25 bbls oil, 25 bbls water, acid 500 gals, Ellis-Madison 1770-1777 ft.

WYOMING

COMPLETIONS

Carbon County—Continental's Johnson-Govt 1, se se sw 1-24n-88w, O'Brien Springs wildcat, elev 6550 ft, abnd 5021 ft; Tensleep 4944 ft. Sinclair-Wyoming's Unit 25-A, nw se sw 6-26n-89w, acid 3000 gals, pump 150 bbls, Tensleep 6034-6374 ft, td.

New Mexico

COMPLETIONS

Eddy County — Williams & Ployhar's Barrientos 3, sw nw ne 35-17s-27e, abnd 453 ft.

Eddy County: Wildcat—Martin Yates Jr. et al's Kelly 1, se nw ne 2-18s-25e, abnd 1675 ft.

Lea County: Lovington—Stanolind's State 8-E, c ne ne 2-17s-36e, flow 78 bbls 18/64-in, acid 6000 gals 4660-4980 ft.

Lea County: Maljamar—Barney Cockburn et al's Miller 3-B, c ne nw 23-17s-32e, flow 35 bbls 2-in, shot 200 qts nitro 3772-3874 ft.

OLD WELL DEEPENED

Eddy County—N. H. Wills et al's Colglazier 1-C, c nw ne 20-20s-30e, otd 1443 ft, pump 24 bbls oil and 24 bbls water, td 1575 ft.

West Texas

Prolific Flow From New Sand at Big Lake

New pay uncovered by outpost in Big Lake field affords prolific yield, and in nearby Barnhart deep pool a major extension is pending. Pipe set for production test in middle Permian by first deep well in Soma-Noelke pool. Pipe-line proration became more general February 19 when the four owners of The Texas-New Mexico Pipe Line Company reduced takings.

Reagan County: Big Lake Oil Co.'s University 19-C, SE SW Sec 24, Blk 9, proved new Permian zone in establishing potential of 3424 bbls 42-gr oil natural from broken saturation 4212-73 ft, total depth 4381 ft, elev 2677 ft. Flowed 132 bbls the first hour and increased to 159 bbls on fourth hour of official gauge through 3-in tubing with considerable back pressure. This strike was scheduled to drill to Ellenburger, but operations were halted after the new pay, probably Upper Clear Fork, showed for flowing well through drill stem. In Barnhart pool, Amerada's University 1-RD, C NW SW Sec 1, Blk 48, 1½ miles east by south of the discovery, was running pipe to bottom at 9228 ft after drilling through Ellenburger saturation. Will perforate 9150-ft level. This outpost is 200 ft low to discovery, and 100 ft low to pool's second producer, which earned initial rating 1783 bbls on ½-in choke from perforations at 9106-32 ft to become deepest producer in Permian Basin. M. H. Reed et al, owners of 80-acre leases in Sections 2 and 9, made two locations on each tract the past week.

Crockett County: Moore Exploration Co. and Olson Oil Co.'s Halff 2-C, southeast edge of Soma-Noelke pool, cemented 5½-in at 3608 ft to try for completion in Lower Permian saturation at 3623-46 ft and 3725-30 ft, elev 2316 ft. Two drill-stem tests yielded sufficient oil- and gas-cut rotary mud from these zones to indicate possible production. Halff 2-C plugged back from water in Ellenburger at 6740-6977 ft.

Ector County: Broderick & Calvert's Holt 4-B, SE SW SE T&P 13, northwest edge of North Cowden field, failed to make commercial producer in regular Permian and abandoned at 5268 ft after testing Holt oil zone, topped at 5122 ft. The deep zone showed nominal oil saturation, but lacked porosity. Field has 6 oil wells in Holt zone, and 4 failures. Half-mile west extension for Goldsmith field was assured when Cliff Mooers et al's Slater 1, NEc SE T&P 12, Blk 45, T-1-S, responded to 4000-gallon acid treatment at 4200-66 ft with ungauged flow into pits.

Slaughter: Development of this expansive oil area continues to surpass that of any single field, although wells without connection increases each week. The Texas Co., largest lease owner, has 35 active operations, including 19 in process of completion; 6 drilling and 10 rigs and derricks.

Dawson County: Magnolia's Scanlan 1, C SE NE EL Ry 113, 1⅞ miles northeast of Cedar Lake field, awaiting drill-stem test at 5000 ft, having entered San Andres at 4665 ft, elev 3142 ft, being 112 ft low to nearest producer. Ray Albaugh et al's Rose 1, wildcat, was drilling at 3270 ft, with top anhydrite at 2070 ft, elev 3018 ft.

Pecos County: Magnolia's Price 1, wildcat 6 miles east by north of Wentz pool and 8½ mi southwest of McCamey, drilling dry lime at 5310 ft, elev 2313 ft. It is in the Ordovician section.

Abell: Sinclair Prairie's Heierman 3, NEc H&TC 12, near west edge of field and south of Sharp sand 5900-ft producers, tested oil-cut mud and sulphur water at 5909-28 ft, and halted at 5999 ft to run pipe. Magnolia and Stanolind's Sharp-State 1, Lot 11, H&GN 22, proved dry in McKee sand at 5430 ft, and was drilling at 5620 ft, and partnership's McKee-Tex-Mex 4, inside well, coring dry Ellenburger at 6205 ft, having tested 5,000,000 ft gas in Sharp sand at 5731-50 ft.

COMPLETIONS

Andrews County: Emma—Texas Co.'s University 4-J, nwc sw¼ Sec 42, Blk 9, pumped 454 bbls, acid 8000 gals 4225-4300 ft.

Cochran County: Slaughter—Devonian Oil Co. et al's Duggan 12-A, nec lab 1, leag 55, Oldham CSL, flow 1223 bbls cas, acid 12,500 gals 4950-5026 ft. Honolulu Oil Corp.'s Igoe-Smith 32-5, nec lab 5, leag 56, Oldham CSL, flow 1115 bbls 2½-in, acid 10,000 gals 4940-5025 ft. Magnolia's Woodley 25, 580 ft from w lab 1, leag 57 and 440 ft from n lse, flow 683 bbls cas, acid 10,500 gals 4925-70 ft.

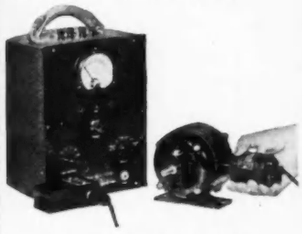
Crane County: Jordan—Texas Co.'s University 8-A, ne sw nw sec 13, blk 35, pump 287 bbls, shot 300 qts 3502-70 ft, td 3590 ft.

Ector County: Goldsmith—Gulf's Goldsmith 382, sec nw T&P 18, blk 44, T-1-S, flow 1144 bbls 2-in, acid 4000 gals, td 4257 ft.

Ector County: North Cowden—Broderick & Calvert's Holt 4-B, sec sw se T&P 13, blk 43, T-1-N, elev 3105 ft, Holt porosity 5097 ft, abnd 5268 ft. Texas Co.'s Holt 19, s½ T&P 10, blk 43, T-1-N, pump 335 bbls, shot 360 qts 4520-4780 ft; Holt 20, c ne sw T&P 10, blk 43, T-1-N, pump 144 bbls, shot 350 qts 4500-4750 ft.

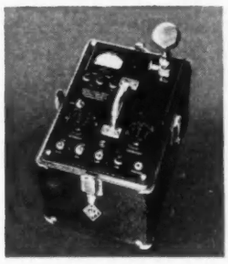
Hockley County: Slaughter — Honolulu's Mallet 12-A, nwc lab 4, leag 52, Scurry CSL, flow 1344 bbls 2½-in, acid 10,000 gals 4949-5025 ft. Magnolia's Mallet 14-B, nec lab 8, leag 50, Scurry CSL, flow 1654 bbls cas, acid 10,500 gals, 4966-5015 ft; Mallet 20-B, sec lab 13, leag 50, Scurry CSL, flow 1437 bbls cas, acid 10,500 gals 4986-5040 ft; Mallet 8-C, sec lab 7, leag 51, Scurry CSL, flow 1312 bbls cas, acid 10,500 gals 5029-48 ft; Mallet 13-F, sec lab 13, leag 49, Scurry CSL, flow 1745 bbls cas, acid 10,500 gals, td 5025 ft; Owens 2, sec lab 87, leag 38, Maverick CSL, flow 615 bbls 2-in, acid 10,500 gals, 4994-5037 ft. Stanolind's Slaughter 24-A, nec lab 47, leag 37, Zavalla CSL, flow 845 bbls 2-in, acid 12,250 gals 5017-84 ft. Texas Co.'s Slaughter 23-E, swc lab 17, leag 49, Scurry CSL, flow 1184 bbls 2-in, acid 14,000 gals 4980-5035 ft; Slaughter 94, c lab 90, leag 38, Zavalla CSL, flow 1827 bbls 2-in, acid 12,000 gals 4940-5034 ft; Slaughter 96, nec lab 75, leag 38, Zavalla CSL, flow 1678 bbls 2-in, acid 12,000 gals 4968-5012 ft; Slaughter 97, nec lab 78, leag 38, Zavalla CSL, flow 2026 bbls 2-in, acid 13,000 gals 4940-5015 ft; Slaughter 101, nwc lab 76, leag 38, Zavalla CSL, flow 1426 bbls, acid 12,000 gals 4960-5022 ft; Slaughter

Among the many instruments needed for indicating, recording, and analyzing vibrations, movements, noises, and accelerations in aircraft, ships, equipment, and structures, the following are worthy of consideration:



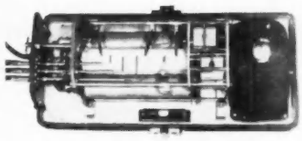
VIBRATION MEASURING EQUIPMENT

Velocity unit, Amplifier-vibration Meter, and Integrating unit for indicating velocities and displacements. In conjunction with recorders, oscillographs, and analyzers, records of amplitudes, velocities, frequencies, and accelerations are obtained.



SOUND LEVEL METER

For the study of noises in engines, propellers, aircraft cabins, buildings, and equipment. Operates with a piezo-electric pick-up to measure vibrations. By amplifying and recording the output of the meter, permanent continuous records of noises and vibrations are obtained.

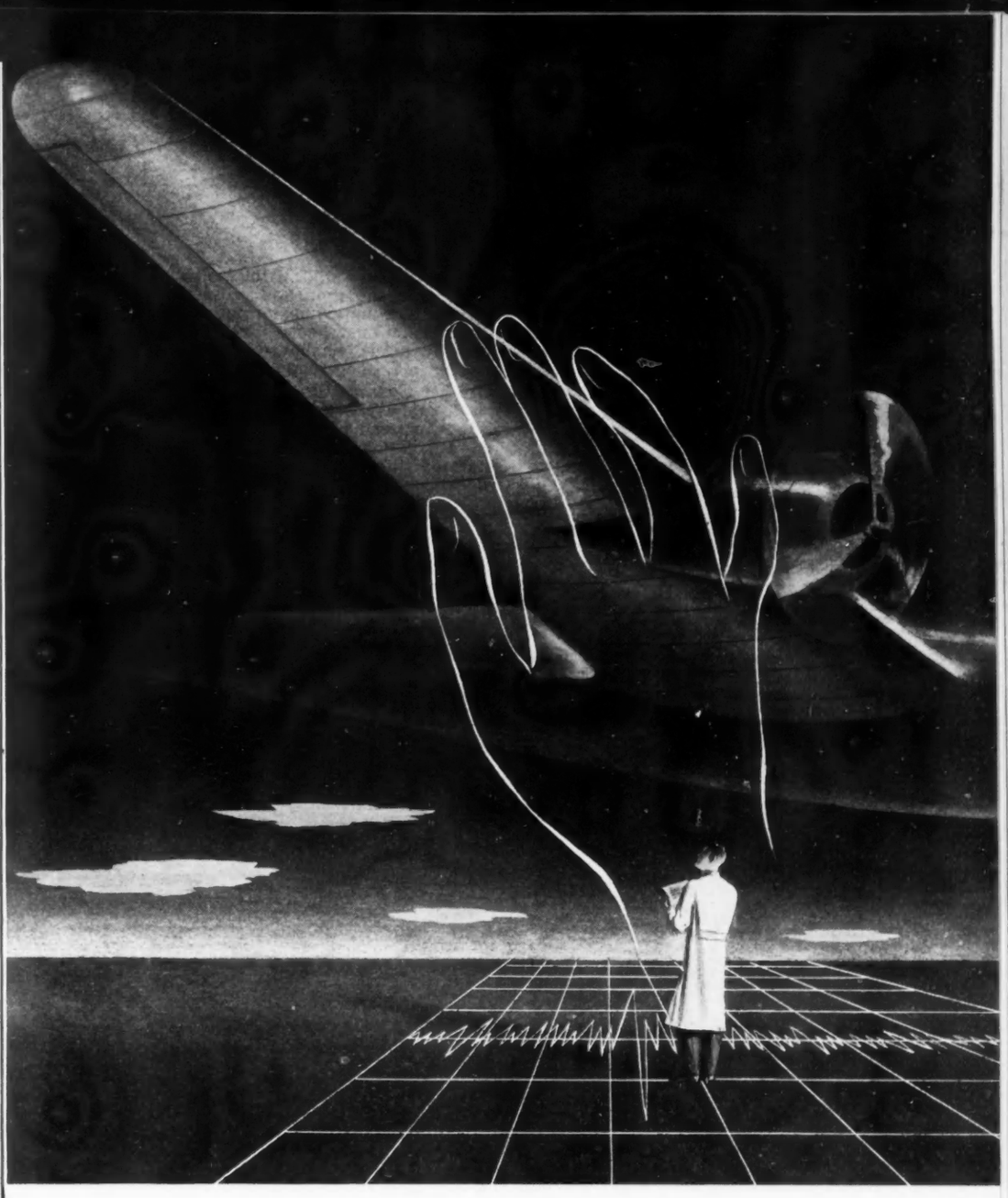


REDHED FLIGHT ANALYZER

A portable instrument for recording the action of airplanes in flight —movements of rudder, ailerons, pitch of plane—especially useful in pilot training. Similar recorders are available for analyzing the actions of railroad cars, autos, boats, and other vehicles.
(Illustrations: General Electric Co.; General Radio Co.; Impact Register Co.)

* * *

Other auxiliary testing equipment in this group: *Waugh Chronograph* for obtaining time-space curves up to 60 inches per second of chart speed. *Bernard Mechanical Oscillators* — apply periodic forces of known magnitudes and frequencies to structures. *Torque Testing Machine* accurately measures torques, in inch pounds, in bolts, shafts, crank shafts, and members of many shapes.



His knowing fingers feel an airplane's pulse

Aviation is one of many industries whose products must be able to "take it." Their performance depends on pre-testing . . . exact knowledge of the effect of strains, forces, and vibrations in and on their structures.

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103, sec lab 90, leag 38, Zavalla CSL, flow 1248 bbls cas, acid 13,500 gals 4960-5025 ft. T. P. Coal & Oil Co.'s Lauhoff 6, 1617 ft from n and 580 ft from e lab 65, leag 39, Maverick CSL, flow 604 bbls 3-in, acid 10,000 gals 4940-5004 ft.

Pecos County: Abell—Magnolia's Bowman 3, 990 ft from nw and 2310 ft from ne lines H&TC 5, blk 3, flow 1762 bbls 44.9-gravity natural ½-in, Simpson 5270-80 ft.

Pecos County: Wildcat—Anderson-Prichard Oil Corp.'s Bowen-Humble 1, c n¼ of e¼ H&GN 60, blk 10, elev 2483 ft, detrital 4890 ft, Ellenburger 4917 ft, abnd 5200 ft.

Pecos County: Fromme—W. H. Street et al's Fromme 1-A, 990 ft from nw and 1650 ft from sw lines H&GN 110, blk 10, elev 2408 ft, abnd 1675 ft.

Pecos County: Taylor-Link—Dave Breeding et al's University-Humble 8-J, nwc sec 13, blk 18, pump 12 bbls, used 2000 gals 1550-1648 ft.

Reagan County: Big Lake—Big Lake Oil Co.'s University 19-C, 392 ft from s and 1928 ft from w lines sec 24, blk 9, new oil level northeast edge field, elev 2677 ft, flow 3424 bbls 42.2-gr, based on 4 hr gauge open 3-in tub, upper Clear Fork 4212-73 ft, td 4381 ft.

Runnels County: Beddo—Art Tucker et al's Dankworth 1, 2012 ft from e and 200 ft from s lines blk 52, D. Diaz sur 532, flow 44 bbls 42.5-gr oil and 18 bbls water, Sarratt sand 2293-2310 ft.

Upton County: Gulf-McElroy—Gulf's McElroy 266, ne sw sw sec 188, blk F, flow 356 bbls 2-in, shot 700 qts 2715-2875 ft.

Upton County: McCamey—Gulf's Shirk 10-E, se ne ne MK&T 35, blk 1, pump 9 bbls, acid 3000 gals and shot 100 qts 2330-70 ft, td 2379 ft.

Winkler County—Gulf's O'Brien 199, nw se ne sec 11, blk F, flow 99 bbls 2-in, shot 440 qts 2719-2949 ft.

Winkler County: Keystone—Ralph Lowe et al's Campbell 1-B, nec e½ se PSL 18, blk B-3, flow 164 bbls ¼-in, shot 170 qts 3277-3333 ft, td 3359 ft.

Winkler County: Scarborough—Richardson Oils, Inc.'s Scarborough 10-F, sw PSL 18, blk 74, flow 124 bbls 1-in, shot 220 qts 2830-2981 ft.

Yoakum County: Wasson — American-Liberty & Atlantic's Herd-Texaco 2, c nw sw sec 795, flow 122 bbls oil, plus 56% bs&w, acid 10,000 gals 4990-5241 ft. Humble's Randall 18, c sw se sec 833, flow 641 bbls ¾-in, acid 6000 gals perf 5020-5125 ft, td 5148 ft.

OLD WELLS DEEPENED

Loving County: Wheat—Standard of Texas' Allen 1, sour cor W&NW 90, blk 1, otd 4315 ft, pump 5 bbls, shot 110 qts 4316-62 ft.

Runnels County: McMillan — Hightower O&R Co. (was Pet. Oil Interests') Brevard 1-A, 150 ft from w and 1050 ft from n lines blk 21, N. Travis sur 533, new and deep pay, otd 2524 ft, Palo Pinto (Canyon) 3520 ft, pump 10 bbls 37.9-gr oil, acid 4000 gals 3526-68 ft.

WILDCAT STARTS

Gaines County—Fred Postelle et al's M. S. Doss 1, 3435 ft from s and 660 ft from w lines leag 293, Lynn CSL, rig.

Pecos County—Anderson-Prichard and Magnolia's E. C. Powell 1, c w¼ of w¼ H&GN 98, blk 10, lcn. Gulf's W. T. Shearer 1, c w¼ of s¼ H&GN 135, blk 10, lcn.

Texas Panhandle

COMPLETIONS

Carson County — Cities Service Oil Co.'s Fields 5, I&GN 13, blk 7, pump 120 bbls, granite-wash 3245-86 ft.

Gray County—Christie-Hickman Drl. Co.'s Gethings 4, H&GN 48, blk A-9, pump 114 bbls, shot 970 qts, lime 2786-2833 ft. Cities Service's Worley 6, I&GN 63, blk 3, pump 34 bbls, td 3075 ft. Skelly's Lovett 9, H&GN 36, blk B-2, pump 284 bbls, 2925-3011 ft. Stanolind's Lovett 4-A, H&GN 36, blk B-2, pump 317 bbls, shot 413 qts, 2900-3042 ft. F. H. Yealy et al's Crank 5, I&GN 163, blk 3, pump 35 bbls, shot 860 qts 3178-3280 ft.

Hutchinson County—Danube Oil Corp.'s Sanford 13-A, H&TC 78, blk 46, pump 240 bbls, 2818-36 ft. Gulf & Panhandle's Dial 110, GC&SF 90, blk Z, pump 123 bbls oil and 182 bbls water, acid 8000 gals 2940-3105 ft. McIlroy Oil Co.'s Tomlinson 5, TC Ry 24, blk M-23, pump 216 bbls, shot 625 qts, lime 3100-85 ft, td 3190 ft. Phillips' Katherine 2, Wm. Cole sur, 8,600,000 gas, 343 lbs rock pressure, shot 625 qts, 3130-60 ft, td 3208 ft. Shamrock O&G Co.'s Lucas 1, 3700 ft e and 330 ft s of swc AB&M 20, blk M-16, but in J. M. Swisher sur, 65 bbls, 3240-57 ft. Harry Stekoll et al's Whittenburg 45-A, GC&SF 89, blk Z, pump 35 bbls, shot 420 qts 2995-3165 ft; Whittenburg 48-A, GC&SF 89, pump 26 bbls, 3085-3115 ft, td 3158 ft.

Moore County—Phillips' Reuter 1, T&NO 200, blk 3-T, 62,500,000 gas, 330 lbs rock pressure, 2820-3045 ft, td 3060 ft. Shamrock O&G Co.'s Johnson 1, c se H&TC 395, blk 44, 260,000,000 gas, 375 lbs rock pressure, lime 2985-3365 ft, td 3517 ft.

OLD WELL DEEPENED

Hutchinson County—Gulf and Panhandle's Dial 92, otd 3030 ft, pump 119 bbls, shot 400 qts 2935-3000 ft, td 3030 ft.

North Texas

Two Archer County Wildcats Promising

Archer County wildcat finds oil saturation in Ellenburger, and prospect on east side of county running pipe to test Bend. Jack County deep lime prospect flows by heads. Shallow oil discovery pending in Cooke County.

Archer County: Continental's Ferguson 1, midway between Hull-Silk and K-M-A, entered Ellenburger at 4894 ft, and attempting drill-stem test of oil saturated dolomite at 5073-84 ft. This wildcat passed up promising saturation in Strawn series, and made unsuccessful attempt to complete in Bend saturation at 4511-21 ft. Sinclair Prarie's Coleman 1, 3¾ miles northeast of Scotland deep pool, cementing pipe on top of Bend at 5292 ft to test section to 5400 ft, having plugged back from dry Ellenburger at 5880-90 ft.

Jack County: Joe A. Worsham et al's Sewell 1, Daniel Crenshaw Survey, 7 miles southeast of Jacksboro, flowed 39 bbls oil on 6-hour test through various chokes after being shutin for pressure buildup. Production is from broken saturation at 4685-4715 ft in Bend, topped at 4676 ft. In the Hoefle pool, Taubert-McKee and Sinclair Prairie's Hoefle 1-A, northwest outpost, failed to flow after acidizing broken pay at 4936-81 ft in Bend, topped at 4931 ft, but assured fifth consecutive producer in yielding 5 bbls oil hourly on 6-hour swabbing test.

Cooke County: Panhandle Refining Co.'s Welch 1, M. W. Ross Survey, 6 miles north of Muenster, plugged back from 1932 ft to test promising oil sand passed up at 1275-1305 ft.

Grayson County: Sinclair Prairie's Wheeler 1, 1½ miles southwest of Collinsville, was coring dry Ellenburger 4505 ft, having showed heavy asphaltic oil in fractures 4422-40 ft. Robt. Tolbert and Finston's Jewell 1, northwestern Grayson County, was drilling tight sand 7450 ft, with nominal shows oil and gas at intervals below 6700 ft.

COMPLETIONS

Clay County: Antelope—Shell's Wright 4, nwc TE&L 2625, flow 240 bbls 2-in, Strawn 3160-80 ft.

Clay County: Ross-Jolly—Continental et al's Dillard 1, swc Jess Massey sur A-321, flow 292 bbls ¾-in, acid 12,000 gals, Bend perf 5380-5478 ft, td 5490 ft.

Clay County: Wildcat — Akin-Dimock & Costley's Huff 2, 700 ft n and 1150 ft w of nec J. Bradshaw sur A-17, abnd 1190 ft.

Clay County—H. B. Wallace et al's Dallas Joint Stock Bank 1, J. Duncan sur, abnd 1351 ft.

Cooke County—H. E. DeLee et al's Rosson 1, BBB&C A-146, pump 15 bbls 1101-09 ft.

Throckmorton County—F. G. Lippett et al's Kelly 2, sec 27, Comanche Reserve, pump 29 bbls 692-710 ft.

Wichita County — Hanlon & Buchanan's Burnett 13-A, H&GN 34, A-435, pump 9 bbls 702-12 ft.

Young County—Cable Oil Co.'s Snider 47, R. Wilson sur A-1276, pump 6 bbls 595-605 ft. S. O. Ewing-Homer & Thompson's Courtney 2, TE&L 1394, pump 3 bbls 832-36 ft. Chas. B. King et al's Dailey 1, S. Tynes sur A-274, abnd 520 ft.

OLD WELLS DEEPENED

Wichita County: K-M-A Ellenburger—Falls Ref. Co.'s Tidwell 2, ne c 40-ac lse, W. H. Spillers sur, otd 3858 ft, pump 10 bbl, acid 1000 gals Ellenburger 4383-91 ft.

Young County—Seiboldt Dlg. Co. et al's Wolfe 1, TE&L 623, otd 3960 ft, Marble Falls 4266 ft, abnd 4503 ft. W. E. Production Co.'s Grubbs 1, 660 ft out nw c TE&L 647, otd 3895 ft, abnd 4372 ft.

WILDCAT STARTS

Archer County—Kimbell & Bohner et al's Robertson 1, 150 ft out nw c blk 14, J. W. Harris sub div, 10 mi w by s Archer City, lcn.

Clay County—Dudley-Fisher & Kahn's Henderson 1-B, 960 ft from n and 900 ft from e lines S. Hernandez sur A-185, lcn.

Wichita County—O. H. Hammer et al's F. W. Hamilton 1, c sw nw H&TC 22, blk 7, lcn 4300-ft test.

West Central Texas

Taylor County Test Has Substantial Flow

Taylor County shallow discovery responds to acid treatment with substantial flow. Shackelford County wildcat fails in Bend, and deepening. Wimberly pool yields big gasser and south extension for oil area pending.

Oil Strike: Snoddy Bros. et al's Tipton 1, northwestern Taylor County wildcat 3 miles northwest of Merkel, flowed 300 bbls oil through open tubing in 11 hours after 2000 gallons acid in Flippen lime 2750-71 ft, elev 1846 ft.

Jones County: Butler & Horne Drilling Co. et al's Fikes 1, NEc S½ Blk 105, west edge Wimberly pool, gauged 14,300,000 ft gas after 3000 gallons acid 2361-75 ft. This gas may be used in repressuring scheduled for area. Lester & Duffield and Clark-Cowden Drilling Corp.'s McCormick 1, south outpost, cemented pipe to test oil saturation topped at 2221 ft, elev 1741 ft.

Shackelford County: Jones-Stasney-Groover and Rose's Gresham 1, C NW SE BAL 7, wildcat, was drilling in water formation at 3750 ft after failing to make producer in Bend saturation 3550-61 ft, elev 1369 ft.

Coleman County: Ellis & Estes' Bridges 1, 1¾ miles southeast of Talpa, encountered hole full water 2595-2602 ft, and was drilling lime 2740 ft, with next probable producing zone due near 2900-3000-ft level. This wildcat marketed small volume oil from sandy-lime 2483-2518 ft, but the yield was not sustained. In Comanche County, Capt. Woodfin and Placid Oil Co.'s Pettit 1, Elizabeth Tatum Survey, originally scheduled to be abandoned in Ellenburger at 3251-76 ft, was drilling black shale at 3425 ft, having logged oil stain and odor in dolomite at 3404-23 ft.

COMPLETIONS

Brown County: Wildcat—D. H. Brock et al's Moore 1, 600 ft from s and 900 ft from e lines lot 21, Chas. Messer sur A-127, abnd 1185 ft.

Callahan County: Wildcat—H. L. Mikeworth et al's Finley 1, 750 ft from n and 450 ft from e lines nw¼ D&DA 16, abnd 757 ft. Virgil Wagley et al's Bennett 1, sec tr, Abe L. Eaves sur 757, abnd 626 ft.

Coleman County: Wildcat—Cooper Bros. et al's McClure 1, near c sw¼ T. B. Frizzell sur 711, abnd 920 ft.

Coleman County—T. S. Schroeder et al's Barnett 1, ne c sw T&NO 21, blk 2, abnd 3742 ft. States Oil Corp.'s Goodson 2-B, ne nw ne T&NO 23, blk 2, pumped 25 bbl shot 30 qts 3630-52 ft.

Eastland County—T. G. Jackson et al's Taylor 3, S. C. Rankin sur, pump 10 bbl, acid 2750 gals 3425-75 ft.

Jones County—Fain-McGaha Oil Corp.'s Tarpley 1, nec blk 104, DeWitt CSL, flow 1122 bbl natural ¾-in, lime 2325-35 ft.

Jones County: Wildcat—Percy Jones et al's Newton 1, 3150 ft w of w line John Smith sur and 3300 ft s of n line Jas. Halfpenny sur 139, elev 1630 ft, abnd 2035 ft.

OLD WELL DEEPENED

Jones County—T. D. Humphrey et al's Dorsey 10, blk 18, M. Bueno sur, otd 2214 ft, pump 201 bbl oil and 68 bbls water 2242-46 ft.

WILDCAT STARTS

Brown County—M. W. Walker et al's M. H. Hill 1, 660 ft out nec S. P. Walker sur, testing oil sand 840-50 ft.

Parker County—B. B. Bryson et al's J. S. C. DeBusk 1, 330 ft from m/w/e and 330 ft from m/s/s lines 87-ac tr, T&P 349, lcn. Oscar Donley et al's C. D. Lassiter 1, 990 ft out nec of F. Blodgett sur A-87, 2 mi w Aledo, dr 800 ft.

members of many shapes.

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East Texas

Well Indicates East Extension to Hawkins Field

Hawkins field has promise of east extension. Trinity project assigned Henderson County large block of leases acquired by The Texas Co. Chapel Hill oil area expanded to northeast.

Hawkins Field: B. F. Phillips et al's Snider 1, S. Castleberry Survey, logged promising Woodbine saturation, topped at 4750 ft, elevation 318 ft, halted at 5000 ft to set pipe on top of sand. S. H. Killingsworth et al's Green 2, twin location to Johnson et al's 5100-foot failure on northeast edge of structure, topped Pecan Chalk 3278 ft, and drilling shale 4200 ft.

COMPLETIONS

Cherokee County: Wildcat—Sinclair Prairie's Mullinix 1, sec 93.2-ac tr, Evan Bolton sur, 3 mi ne Maydelle, elev 605 ft, Pecan 3896-4243 ft, Austin 4808-5006 ft, Woodbine water 5054 ft, abnd 5139 ft.

Freestone County: Wildcat—F. J. Gravis et al's Bonner 1, 1323 ft from n and 4100 from w lines M. Anderson sur, 7 mi nw Fairfield, elev 384 ft, Pecan 2260-2330 ft; top Austin 3140 ft, abnd 3947 ft.

Freestone County: Long Lake—Carter-Gragg Oil Co.'s Johnson 2, 467 ft from se line lse and 750 ft sw No. 1, H. Wheeler sur, 61 bbls 6/64-in, td 5319 ft.

Hopkins County: Wildcat—Donnie Pet. Co.'s Welborn 1, 660 ft out swc 55-ac lse, Jas. Webb sur, elev 526 ft, top Pecan between 2435-75 ft, Austin 3660-3951 ft, abnd in Woodbine water sand 4500 ft.

Houston County: Grapeland—Lone Star Gasoline Co.-Trinity Gas Corp.'s Newman-Gulf 1, 1950 ft from nw and 10,640 ft from sw lines J. D. J. Procilla sur, sw edge field, 90,000,000 gas, with 35 bbls distillate per million, Woodbine perforations 5882-5904 ft, td 5947 ft.

McLennan County: Wildcat—McLennan County's U. S. Gov. 2, J. Walker sur, water well, abnd 2325 ft.

Navarro County: Wildcat—Dodwell & Eubank's West 1, 1200 ft sw of ne and 1211 ft ne of sw lines 73-ac tr, T. O. Jones sur, elev 440 ft, Pecan 1930-2200 ft, Austin 2310-2775 ft, Woodbine 2890 ft, abnd in water 3170-76 ft.

Smith County: Chapel Hill—Chapel Hill Gas System's Gilliam 1, 81.76-ac tr, A. B. Harris sur, flow 312 bbls dist ⅜-in, gas/oil ratio 15,400/1, acid 4000 gals Pettit perf 7980-8068 ft, td 8116 ft. Sun's Jackson 1, 660 ft from w and c of n and s lines 109.64-ac tr, John Slayden sur, 352 bbls, 3/16-in, acid 4000 gals Pettit perf 8154-8335 ft, td 8376 ft.

Wood County: Hawkins—E. B. Germany et al's Christian Board 1, center 20.3-ac lse, Wm. Burtch sur, 218 bbls ¼-in, Woodbine perf 4712-30 ft, td 4800 ft. Humble's L. A. Bryan 5-B, Acct. 1, 164¾-ac lse, M. A. Esparcia sur, 411 bbls ¼-in, Woodbine perf 4786-4846 ft, td 4876 ft; Ella Faulk 2-B, sec 107.54-ac lse, Wm. Herrington sur, 368 bbls ¼-in, Woodbine perf 4738-4866 ft, td 4887 ft; B. C. Wyatt 2, sec 146.76-ac lse, Wm. Herrington sur, 411 bbls ¼-in, Woodbine perf 4840-59 ft, td 4886 ft. Texas Co.'s J. O. Cobb 3, nwc 105.05-ac tr, H. F. Robinson sur, 288 bbls ¼-in Woodbine perf 4680-90 ft and 4768-76 ft, td 4823 ft.

WILDCAT STARTS

Cherokee County—John G. Mayo and H. R. Burden's New Birmingham 1, near center B. Newton sur, 5 mi ne Rusk, cem surface pipe.

Henderson County—Texas Co.'s E. T. Brown 1, 1980 ft from s and 3333 ft from w lines 826-ac tr, Armistead Eans sur, ne of New York, lcn.

Southwest Texas

Sejita, Duval County, Has Oil on West Flank

Sejita field, Duval County, was added to the oil-producing list when a west flank test flowed from Hockleyensis. Trinity Gas Co.'s Garcia 1, Tract 32, flowed 23 bbls of 43.1-gr oil per hour, through ¼-in choke, with tubing pressure 750 lbs and casing 1150 lbs, from perforations at 5784-92 and 5795-97 ft in sand section 5780 to 5816 ft. Well is shut in pending rules. A number of companies hold acreage in the vicinity.

Dimmitt County: Puencitas Creek gained second Navarro-Taylor gas sand in two-mile extension when Wellington Oil Co.'s Sullivan 2-B, section 606, flowed gas when perforated with 71 shots between 1888 and 1895 ft; 335 lbs tubing and 765 casing pressure with ¼-in choke.

Kendall County: York Petroleum Co.'s Werner 6, Sistersdale prospect, cut saturation in Ellenburger, 1022-33 ft, and will shoot with nitro.

SOUTH CENTRAL TEXAS

Medina County: Chicon Lake—Charles H. Wagner et al's Medina Farms 2-C, Palmer sur 20, 250,000,000 gas, 150 lbs. rp, sand 550-60 ft, td 590 ft.

Milam County: Minerva Rockdale—H. H. Coffield's Fee 1, Thompson gr, pump 20 bbls 37-gr oil, sand 1340 ft, td 1367 ft.

LOWER GULF COAST

COMPLETIONS

Bee County: Wildcat—Tom Slick's Grissom 1, McEarley sur, 1 mi s Caesar field, flow 127 bbls 42.4 gr, ⅛-in chk, 1800 lbs tp, 2200 lbs cp, gas/oil ratio 2108/1, perf 6552-57 ft, Carrizo 6504 ft, sand 6523-57 ft, td 7509 ft.

Brooks County: La Gloria—Magnolia's Young 1, lot 9, blk 11, dual sand gas/distillate well, perf 5745-90 ft, 5830-70 ft, dst 270 ft dist cut mud 1175 lbs wp, ¼-in chk, 15 min, 2500 lbs bhp flowing, 2750 lbs shut in, perf 6620-70 ft with 250 shots, ran 4½-in to 6680 ft, 1¼-in to 5927 ft, comp to recycling plant, shut in pressure 2325 lbs on upper sd, 2750 lbs on lower.

Hidalgo County: Wildcat—Arkansas Fuel Oil Co.'s Heard 1, lot 235, Los Ejidos de Reynosa A. Vieja gr, 4 mi se Nichols field, flow 12 bbls 54.5-gr condensate 5/32-in chk, 2450 lbs tp, 2550 lbs cp, gas/oil ratio 83,000/1, perf 6020-27 ft, Frio 5922 ft, td 6813 ft.

Hidalgo County: Wildcat—Baldridge & King's M. V. de Chapa, Porc 74, 4 mi e Sullivan City, abnd 5012 ft.

Jackson County: Lolita—Magnolia's Four-Way Ranch 9, blk 147, flow 154.56 bbls 43.2-gr oil, 7/64-in ch, 1050 lbs tp, 1250 cp, gas/oil ratio 873/1, perf 6403-5 ft, sand 6932 ft, td 6407 ft.

Jackson County: N. LaWard—Humble's

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Four-Way Ranch 6, sec 6, blk 61, flow 552 bbls 25.2-gr oil, ¼-in ch, 575 lbs wp, gas/oil ratio 270/1, sand 5217 ft, td 5220 ft. Magnolia's Gordin 1, blk 6, sec 1, flow 115.84 bbls 25.1 gr oil ¼-in ch, 625 lbs tp, 750 lbs cp, gas/oil ratio 253/1, perf 5217-21 ft, sand 5217 ft, td 5225 ft. Moore & Ahern's Burditt 5, blk 10, flow 436 bbls 25.2-gr oil, 3/16-in ch, 570 lbs tp, 800 lbs cp, gas/oil ratio 220/1, perf 5206-10 ft, sand 5206 ft, td 5218 ft.

Jim Wells County: Seeligson—Shell Seeligson 1, sec 48, outpost 1 mi sw field, flow 180 bbls 41.8-gr oil, 7/64-in ch, 1195 lbs tp, 1295 lbs cp, gas/oil ratio 564/1, sand 5943-98 ft, 5½-in 5965 ft, td 6020 ft.

Carnes County: Wildcat—Phillips' Strunk 1, C. Martinez sur, 3¼ mi se Kenedy, abnd 8514 ft in Wilcox.

Lavaca County: Wildcat—W. S. Boyle et al's Roecher 1, M. Wooten sur, 10 mi se Halletsville, abnd 9104 ft in Wilcox.

Live Oak County: S. White Creek—J. D. Stelzig et al's Miller & Gayle 1, tr 3028, blk 61, abnd 1870 ft.

Nueces County: Agua Dulce—F. A. Gillespie & Sons' Von Blucher 1, Pauls sub, e side field, flow 73 bbls oil ¼-in ch via gas injection, perf 7255-61 ft, sand 7247 ft, td 7315 ft. Pan American Prod Co.'s Aetna 1, sec 306, flow 42 bbls 48.7-gr oil, ¼-in chk, 975 lbs tp, cas sealed, perf 6410-13 ft, sand 6400 ft, td 7202 ft.

Nueces County: Stratton—Standard of Kansas's Davis 1, sec 199, flow 38 bbls 43-gr oil 3/16-in ch, 110 lbs tp, 1050 lbs cp, gas/oil ratio 320/1, perf 6580-6623 ft, sand 6584 ft, td 6692 ft.

Refugio County: Refugio—Hewit & Dougherty's W. J. Reilly 4, lot 16, blk 3, flow 113 bbls 9/64-in ch, 225 lbs tp, 500 lbs cp, perf 6255-59 ft, sand 6255 ft, td 6270 ft.

Refugio County: Tomoconnor—Shield Oil Co.'s Heard 1-C, M. J. Ximinez sur, abnd 6285 ft.

San Patricio County: Odem—Seaboard Oil Corp's Lane 5, blk 11-A, 2,500,000 gas, ¼-in ch, 2400 lbs tp, 2450 lbs cp, perf 5327-29 ft, td 5511 ft. H. A. Smith 2, flow 118 bbls 33-gr oil ¼-in ch, 500 lbs tp, 900 lbs cp, gas/oil ratio 255/1, perf 5323-25 ft, td 5455 ft; M. C. Smith 4, 314-ac lse, flow 95 bbls 37.3-gr oil ⅛-in ch, 925 lbs tp, 2050 lbs cp, gas/oil ratio 1056/1, perf 6750-58 ft, sand 6750 ft, td 7518 ft; J. F. Welder 4-B, blk 6, outpost 1 mi w of s end feld, flow 163 bbls 37.5-gr oil ¼-in ch, 725 lbs tp, 1325 lbs cp, gas/oil ratio 423/1, perf 5427-37 ft, td 5445 ft.

Victoria County: E. Placedo—Stanolind's Vandeberge & Hill 13, E. Benavides gr, flow 161 bbls 39.1-gr oil ¼-in ch, 1275 lbs tp, 2275 lbs tp, gas/oil ratio 800/1, perf 6868-70 ft, sand 6858 ft, td 6878 ft.

WILDCAT STARTS

Bee County—Celtic Oil Co.'s Magnua Beck 1, 1980 ft swl, 660 ft sel J. R. Johnson sur, Ab 206, S. Plummer pros, 1¼ mi s shallow Plummer field, prep to mi for 7500 ft Carrizo-Wilcox test.

Nueces County—Wellington & Seaboard's Chas Michalk 1, 660 ft n & w lines blk 1, sec 6, Luby sub, 4 mi se Driscoll, loc for 7000 ft test.

Refugio County—Hewit & Dougherty's B. D. Rooke 6-A, in southerly bend Arkansas river, J. M. Aldrete gr, 2 mi nw Plymouth field, 4 mi sw LaRosa field, dr 4000 ft on 7000 ft contract.

SOUTHWEST TEXAS

COMPLETIONS

Jim Hogg County: Colorado—Humble's King-Colorado 54-B, Las Moritas Gr, flow 106 bbls 46.4-gr oil, ¼-in ch, gas/oil ratio 120/1, sand 2971-80 ft, td 2980 ft. V. F. Neuhaus' Trevino 5-G, Lino Ramirez sur 37, abnd 2962 ft.

Jim Hogg County: Wildcat—Locke Purnell & Earl K. Bateman's Garza 1, blk 9, sur 145, 1½-mi nw Colorado field, abnd 3027 ft.

McMullen County: Wildcat—Magnolia's Atkinson 1, AB&M 125, 16 mi ne Freer, abnd 4207 ft.

Starr County: North Rincon—Sun's Hall 3, AB&M 99, outpost 2234 ft sw No. 1, 2000 gas & spray dist, ⅛-in chk, 1825 lbs tp, 1825 lbs cp, perf 4592-4610 ft, sand 4570-4611 ft, td 5125 ft.

Starr County: Sun—Humble's Saenz 2, Los Retachez "Juan Jose Sais" gr, flow 76 bbls 45.6-gr oil, 3/32-in chk, 850 lbs tp, 775 lbs cp, gas/oil ratio 670/1, sand 4641-51 ft, td 4651 ft.

Starr County: Yturria—Sun's Chapotal 6-A, Y. Trevino Porc 99, flow 109.8 bbls 42-gr oil, 9/64-in ch, 425 lbs tp, 180 lbs tp, gas/oil ratio 379/1, oil sand 4227-42 ft, td 4242 ft. Sun's Chapotal 7-A, Y. Trevino Porc 99, flow 129.8 bbls 42-gr oil, 9/64-in chk, 450 lbs. tp, 230 lbs cp, gas/oil ratio 377/1, sand 4193-4102 ft, td 4202 ft.

WILDCAT STARTS

Duval County—Magnolia's DCRC 1 (909), 660 ft n & e lines w½ Sec 909, 10 mi sw Freer, ru 3300-ft test.

Starr County—Quinto Oil Co. & F. A. Gillespie & Sons' Bass 1, sec 125, 15 mi n Roma, prep to mi for 1200-ft test. Sun's Ramirez-State 1, A. Ramirez (State) No. 174, 35 mi ne Rio Grande City, mi 4400-ft test.

Webb County—W. W. Anderson's A. M. Bruni Est 1, center sw blk 85, Killam sub, Ranchita Pasture, Borrego gr, 7 mi s Aguilares, lcn 3500-ft test.

Texas Gulf Coast

Aldine Area Wildcat Cores Thin Sand Sections

Aldine wildcat cores small sand sections; operators still making production tests on Ramers Island discovery, Tyler County.

Harris County: George W. Strake's Phenix 1, wildcat in Aldine area, found thin sand sections around 7116 ft that showed gas and distillate. This well was thought to be running low on formations, but actually cores indicated a thinning of formations and is thought to be running high to other wells in area. It is 1½ miles southwest of Aldine's 1-well field in the Peter F. Craft survey.

Atlantic Refining Co. is still trying to get back on bottom in Cohn 1, wildcat in Meredith Duncan survey, across creek in Harris County from Liberty County's Esperson field. Operators have been circulating around 6500-6900 ft after losing circulation around 7000 ft. The well tried to blow out at 8815 ft.

Tyler County: American Republics Corp. and Houston Oil Co.'s Cushing 1-1140, which opened the Ramers Island field, east portion of Tyler County, is being reperforated in attempt to establish a steady producer. The well is producing from the Cockfield sand, but it flowed only 67 barrels of 45-gravity oil on a 24-hour test. The gas-oil ratio mounted, and operators are testing again in perforations between 5395-5400 ft, after squeezing perforations and setting retainer at 5350 ft. The Texas

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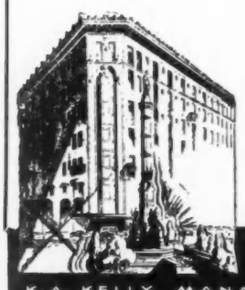

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Railroad Commission has specified 40-acre spacing with gas-oil ratios as high as 2000-1. The same rules were made applicable to Camp Eleven.

COMPLETIONS

Brazoria County: Wildcat—H. E. Williams' C. L. Mowrey, 466 ft fr s & w line of ne cor 40-ac lse out of 400-ac tr, Andrew A. Robinson sur 12, salt water sand 6485-6527 ft, abnd 6541 ft.

Chambers County: Anahuac — Humble's Johnson 42, 467 ft fr wl, 1843 fr sl H&TC 49, flow 3 bbls hr ¼-in ch, td 7225 ft.

Chambers County: Fig Ridge—Sun's Smith 2, 467 ft fr wl, 467 fr sl T&NO 82, perf 8468-95 ft, flow 183 bbls ⅛-in chk, tp 1800, cp 400, 36.7 gr, gor 1192-1, td 8602 ft.

Chambers County: Oyster Bayou—Sun's Jackson 9, 660 ft fr nl, 1758 fr el T&NO 123, perf 8260-8300 ft, flow 741 bbls ¼-in ch, tp 1375, cp 2300, 36.5-gr, gor 670-1.

Chambers County: Red Fish Reef—Humble's Galveston Bay-State A-29, 1980 ft fr nel, 1980 fr sel sec 248, flow 8 bbls hr ⅛-in ch, td 9355 ft.

Chambers County: Willow Slough—Sun's Hebert & Broussard A-5, 3600 ft fr el, 1655 fr sl T&NO 125, flow 119 bbls ⅛-in chk, tp 100, gr 35, gor 438-1, td 8482 ft.

Jefferson County: Fannett—Gulf's Hamshire 1, 1500 ft s of nl William H. Smith sur, nw side field, abnd 9034 ft; Jackson A-2, 330 ft fr sel, 733 ft s 1-A, W. H. Smith sur, abnd 8388 ft.

Matagorda County: Wildcat El Maton area —Continental's Doman 1, south Markham field, west of Buckeye, John Partin lge, abnd 10,033 ft.

Louisiana Gulf Coast

New Development Due to Follow Pine Prairie Extension

New development due to follow southwest extension of Pine Prairie field, Evangeline Parish; Cities Service continues to test discovery in Jeff Davis Parish.

Evangeline Parish: More drilling is expected to follow the southwest extension to Pine Prairie production with E. J. Nicklos' Reed 2 flowing 794 barrels of oil from 30 ft of Cockfield sand. Perforations were made at 7780-92 ft while the sand ranged from 7764 to 7794 ft. Cockfield was topped at 7764 ft, total depth 7815 ft. South of the field, L. M. Josey and H. G. Nelms' Haas 1 topped Cockfield at 8065 ft, finding salt water in sand at 8072-8120 ft.

Jefferson Davis Parish: Cities Service is making more tests in Lacassine 1, discovery well in Thornwell area, Section 35-11s-5w. The well flowed about 1,250,000 cubic feet of gas daily with 20 barrels of water-white distillate through 9/64-inch choke from perforations at 9632-38 ft. Tubing pressure is 3400 pounds, shutin pressure 3550. Total depth is 10,325 ft.

COMPLETIONS

Evangeline Parish: Ville Platte—Gulf's Vidrine 4, 3140 ft s 2270 w nec 39-4s-2e, perf 10,092-102, 10,127-136, 10,142-185 ft, flow 195 bbls 3/16-in chk, tp 800, td 10,320 ft.

Iberia Parish: Fausse Point—Texas Co.'s State-Fausse Point 10, 6317 ft n, 3368 e sw c 26-11s-8e in lake, perf 8590-8605 ft, flow 260 bbls 10/64-in chk, tp 1075, td 8717 ft.

Iberville Parish: Bayou Blue—Superior Schwing 1, south flank Bayou Blue, 2310 ft s & 342 ft e nw cor sec 72-9s-11e, salt 5148 ft, abnd 5152 ft.

LaFourche Parish: Golden Meadow—Brown-Woods Oil Corp.'s Lucien Cheramie 1, 417 ft n & 36 ft e sw cor 22-19s-22e, abnd 5204 ft.

St. Charles' Parish: Paradis—Texas Co.'s LaFourche Basin Levee Dist. 1, 3307 ft s 565 w ne c 7-14s-20e, perf in 10,300 ft sand, flow 253 bbls 9/64-in ch, td 10,390 ft.

St. Martin Parish: Anse la Butte—Crosby Drilling Co.'s Republic 7, perf 6242-45 ft, show oil & water, squeezed & reperf 6226-32 ft, show salt water, reperf 6026-30 ft, flow 253 bbls 9/64-in ch, td 6305 ft.

St. Martin Parish: West Lake Verrette—Shell's Breaux 2-B, 2230 ft n 89 deg 25 mins e alg sl sec 15 fr sw cor, thence 660 ft n 29 mins s in 15-14s-12e, perf 11,484-96 ft, flow 1,780,000 gas, 9/64-in ch, tp 1700, gor 720-1, td 11,500 ft.

St. Mary Parish: Bayou Sale—Humble's Wooster 3-B, 1170 ft nw fr e cor sec 16-16s-9e, perf 10,462-65 ft, tested & squeezed, pb to 4567 ft, perf 4552-67 ft, flow 2 bbls hr ¼-in ch, 38.8 gr, td 11,800 ft, sand.

St. Mary Parish: Belle Isle—Sun's State-Belle Isle 7-350, 195 ft n, 210 e sw c 31-17s-11e, stuck drill stem, abnd 2340 ft.

St. Mary Parish: West Cote Blanche—Texas Co.'s State-West Cote Blanche Bay 10, oil sands 8765-8841 ft & 9000-9100 ft, perf 9080-95 ft, flow 292 bbls 10/64-in ch, td 9220 ft.

Terrebonne Parish: Lake Pelto—Texas Co.'s State-Lake Pelto 37, 2885 ft s, 1308 w nw c 20 in 30-23s-18e, perf 7865-7900 ft, acidized 100 gals, pum 64 bbls, td 9162 ft.

Vermilion Parish: Delcambre—Ambrose Delcambre's Dandry 1, 1980 ft n 53 deg intersection sl sec 5 with Bayou Tigre, thence 1920 ft n 27 deg w in 54-13s-5e, abnd 5085 ft.

OLD WELL WORKED OVER

Jefferson Parish: Barataria—R. E. Carter's Pailet 1, 805 ft fr w & 335 ft nl unit 99 in 2-16s-23e, squeezed and reperf 10,054-56 ft, flow 245 bbls 12/64-in chk, tp 1275, td 10,112 ft.

WILDCAT STARTS

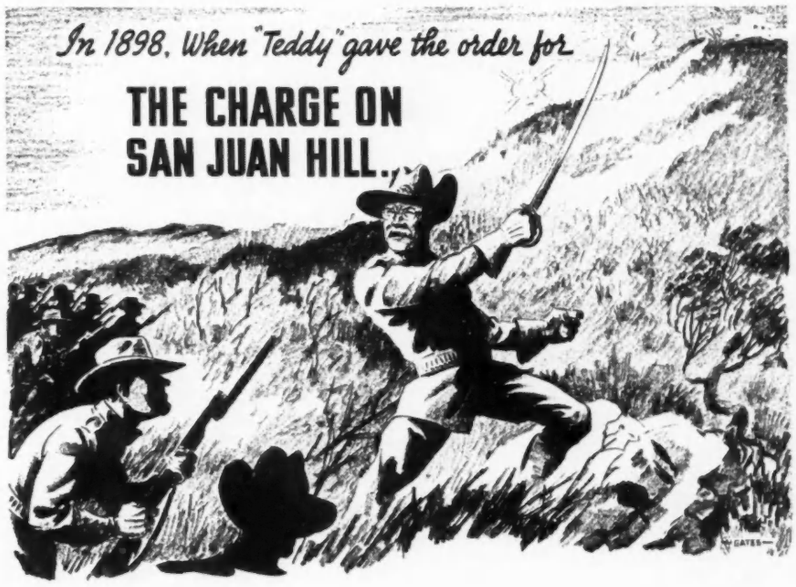
Evangeline Parish—Texas Co.'s LaDanois Land Co. 1, Pine Prairie area, 1300 ft e of LaDanois 1 dry hole, being in sw¼ sec 35-3s-1w, lcn.

North Louisiana

Order 80-Acre Spacing For Haynesville Pettit

Eighty-acre space rule for Pettit at Haynesville, and first price schedule posted for that oil; first North Louisiana test to reach 12,000 ft drills ahead.

Haynesville: The fourth Pettit oil producer completed as Louisiana Conservation Commission orders an 80-acre space rule for that horizon. Five tests drilling on 40-acre space rule must build to 80-acre unit or shut down in 30 days. Tests to be drilled on alternate 40-acre tracts, checkerboarded so that if rule changed to 40 acres when materials become available these 40-



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acre tracts can be drilled. Under 80-acre rule tests can be drilled in northeast or southeast of any quarter-section.

Price scheduled for Pettit sand oil was posted February 16 by Arkansas Fuel Oil Company at $1.20 for 40-gravity and above with a two-cent differential for each degree down to below 25 which is 88 cents.

North Lisbon: North Louisiana's first test to go below 12,000 ft, Union Producing Company's McDonald 1, C SW 13-21n-5w, Claiborne Parish, North Lisbon that showed for distillate production at 11,872-80 ft. Last week it drilled below 12,132 ft.

Concordia Parish: The California Co.'s Pan-American 1, Section 16-9n-10e, wildcat near Bayou St. John, reported oil and gas on drill-stem test in Wilcox.

COMPLETIONS

Caddo Parish: Pine Island—J. W. Bailey's Muslow 2, sec 32-21n-15w, pump 20 bbls 1522 ft. Harvey Schnidt's Wilkerson 1, 22-20n-14w, pump 2 bbls oil and 60 bbls water, td 890 ft.
Claiborne Parish: Haynesville—Ohio's Bond 1, 21-23n-8w, perf 5356 ft, flow 16 bbls oil 4 hours, 5370 ft. (Pettit).
DeSoto Parish: Grand Cane—J. E. Stack, Jr.'s Huson 1, sw se 8-12n-14w, pump 140 bbls, 3003 ft.
Catahoula Parish: Cypress Bayou—Carter's Catahoula Lake A-1, c sw nw 5-6n-4e, elev 60 ft, Wilcox 2750 ft, pb 4303 ft, perf 4084-89 ft, swab 40 bbls, td 5490 ft.
LaSalle Parish: Larto Lake—Phillips and Carter's Tensas Delta B-4, sw ne 14-5n-5e, abnd 5265 ft.
Winn Parish: Wildcat—H. L. Hunt's Goodpine F-72, c nw se 19-10n-4w, abnd 6502 ft.

WILDCAT STARTS

Bossier Parish — Ward Delaney et al's Wheless 1, sw ne 20-18n-12w (amended location, 6000 ft test), rig.
Claiborne Parish—C. C. Smyer's Kennedy 1, se se 9-22n-4w, rig.
Natchitoches Parish—H. L. Hunt's Goodpine F-23, 1980 s, 660 e nwc 12-13n-7w, rig.
Red River—C. L. Archer's Cockerham 1, 1980 n, 660 w sec 16-13n-11w, spd.

Arkansas

Midway Drilling Finds Markers Low

Second gas-distillate well at Big Creek, Columbia County; first Cotton Valley oil producer re-completed at McKamie and edge test there abandoned; six tests planned for Travis Peak at Stephens; eight locations staked at Midway, bringing operations to 27 and 3 tests reach Buckner marker.

Big Creek: J. W. Love's Stager 1, C NE 9-17-21, second test for the field, Columbia County, opened two years ago but never developed, was flowing gas, distillate and mud as it cleaned itself February 19. Total depth is 7985 ft. Tops: Buckner, 7748; Smackover lime, 7961; porosity, 7970 (elev 263 ft). Logged 15 ft of saturated lime.

McKamie: Carter's Cornelius Unit 1, C NE 30-17-23, was re-completed in the Cotton Valley after re-perforating 7255-65 ft and gauged 12 barrels per hour on ¼-inch choke, casing pressure 525; tubing, 300; flowing 46.2-gravity (corrected) black sweet oil; gas/oil ratio 134 to 1. It was the first lower Marine oil producer at McKamie and the second commercial well in that horizon.

Stephens: Owenby Drilling Co. rigged last week for J. F. Smart 1, NW NW NE 13-15-20, first of a series of six proposed tests to the 3400-ft Travis Peak horizon discovered there several months ago.

Midway: Nine locations were staked, bringing total operations to 27. One other test 4 miles northwest was staked in Hempstead County. Bowie County, Texas, continued to feel the effects of the Midway discovery with Gulf Oil Corp., Texas Co., and Stanolind reported leasing in that county and Arkansas Fuel Oil Co. and Sinclair Prairie Oil Co. having geophysical units in that county. Gulf is leasing south of Redwater and Maud. Texas is leasing west of Simms and Stanolind, southwest of Simms.

Three tests at Midway logged top of Buckner, all slightly lower than discovery. Barnsdall's B. H. Dobson 1, SW SW 11-15-24, elev of 293, topped Buckner 6220 ft, 46 ft below the discovery well, and drilled at 6343; B. H. Dobson 2, SE NE 10-15-24, elev 282 ft, logged Buckner 6230 ft, 60 feet low, and drilled at 6358; Arkansas Fuel Oil Co.'s Creek 1, NE SE 10-15-24, elev 269 ft, Buckner 6220 ft, 70 feet low, and drilled at 6341 feet. Ten other tests drilled in the field.

COMPLETIONS

Columbia County: Stephens—R. H. Crow's Smart A-2, nw se sw 12-15-20, abnd 3405 ft.
Lafayette County: McKamie—Atlantic's Bodcaw 9, c ne 33-17-23, elev 272 ft, Buckner 9290 ft, abnd 9623 ft.

WILDCAT STARTS

Hempstead County—Sylvan-Copeland's Ford 1, nw nw 32-14-23, rig (Crescent Drlg. Co., contractor; Smackover lime test).
Phillips County—John C. Liming's Watkins 1, 680 ft s, 550 e nwc nw sw 7-1s-3e, rig.

California

Turnbull Canyon Strike "Too Good to Be True"

Two new wildcats scheduled for Kern County at North Dominion and Wheeler Ridge areas; outpost improves outlook for Turnbull Canyon area and Newhall wildcat proves extension area in Los Angeles County; Ventura Avenue extended.

Kern County: Wilshire Annex Oil Co. has location for a test in the North Dominion area, Amalgamated 1, 17-25-28, a shallow try. Operator will examine zones below 1100 ft in equivalent of Pyramid Hills sand.

Richfield Oil Corp. has location for its third test to the West of the Bakersfield Highway in the Wheeler Ridge district and will test zones around 5000 feet.

Los Angeles County: Second well drilled by Continental Oil Co. at Turnbull Canyon, Community 2, 13-2-11, bottomed 3841 ft with 440 ft of perforated liner at 3678 ft, flowed 700 bbls 26.6-gravity oil through 1-in bean in 15 hrs. First completion in area was small producer and new completion, one location west, materially improves outlook, although company is of opinion well may be producing from a pocket and may not live up to first indications. Only a small amount of gas is being produced, indicating a possible water drive.

C. G. Willis is preparing to recomplete Ferguson 1 wildcat, 36-4-17, Newhall-Castaic area, a westerly outpost near the Newhall-Potrero field. Bottomed at 7519 ft in gray sand and shale, well was plugged at 7140 ft and flowed by heads an initial rate of 350 bbls daily, 32.8-gravity oil cutting some mud, and with only small amount of gas.

COMPLETIONS

Fresno County: Jacalitos Hills—Wilshire Annex Oil Co.'s 41-26-E, 220 ft S 2293 e nwc 26-21-15, oil & emulsion on test 10 ft sand 4009-4058 ft, top Temblor 3980 ft, abnd 4072 ft.

Kern County: Coles Levee—Ohio's KCL F-20-67-10, 994 ft n 1651 ft w se cor 10-31-25,

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flow 915 bbls ¾-in bean 275/0 lbs, 332 ft, perf 9772 ft, td 9774 ft. Richfield's KCL-C 36-27, 1625 ft n 1676 ft e sw c 27-30-25, flow 2400 bbls, 2 1¼-in beans, 300/320 lbs, 241 ft perf 9385 ft, td 9390 ft.

Kern County: Greeley—Superior's Moore 3, 990 ft n 1370 e se cor 27-30-25, flow 1620 bbls ½-in bean, 34 ft perf 11,494 ft, Rio Bravo 11,461 ft, td 11,494 ft.

Kern County: Kern Front—Westates Petroleum Co.'s Cauley 16, 2340 ft n 650 w se cor 16-28-27, pump 170 bbls, 205 ft perf 2700 ft, td 2700 ft.

Kern County: Midway—H & T Oil Co.'s No. 4, 340 ft n 1327 w se cor n½ nw 15-31-22, pumped no est; 280 ft perf 1224 ft, td 1224 ft.

Kern County: Mount Poso—R. R. Bush Oil Co.'s Rodgers-Jones 1, 200 ft s 500 e c 35-26-27, wet Vedder 2892 ft, abnd 2924 ft.

Kern County: Union Avenue—Richfield's Union Avenue 2, 331 ft s 1651 w e¼ cor 6-30-28, pump 100 bbls 14-gr 50% cut, perf 4231-4255, 4628-4648, 4695-4679, 4712-4718, 5100-5120 ft, Santa Margarita 5050 ft, td 5340 ft.

Los Angeles County: Wilmington—Chester F. Dolley's 1, 175 ft s 169 e c l Anaheim & Stanford, pump 165 bbls 15.9-gr, perf 1620-2700, 2750-2930, 3170-3595 ft, td 3595 ft. Meredith & Beem's Wilmington 1, 221 ft s 100 w sw c Quay & C, pump 61 bbls, 15.3 gr, 670 ft perf 3680 ft, td 3705 ft.

Orange County: Huntington Beach—Western American Oil Co.'s Ashton 11, 56 ft n 1355 e c l Edwards & Schleicher, pump 125 bbls 24-gr 2.5% cut, perf 4067-4090, 4185-4205 ft, td 4368 ft.

Santa Barbara County: Cat Canyon—Unfon's Bell 13, 330 ft s 330 e c 27-9-33, pump no est 649 ft perf 6049 ft, td 6050 ft.

Ventura County: Ventura Avenue—Shell's Edison 39, 874 ft n 1688 w c l No. 11, gas lift 503 bbls, 978 ft perf 9750 ft, td 9750 ft. Tide Water's McGonigle 18, 1290 ft n 5563 e c l No. 11, flow 431 bbls, 1-in bean, 333 ft perf 10,045 ft, td 11,350 ft. Tide Water's VL& W-55, 652 ft n 10,422 e c l No. 11, flow 922 bbls, 2-in bean, 100/800 lbs, 607 ft perf 10,517 ft, td 10,750 ft.

OLD WELLS DRILLED

Kern County: Buttonwillow—Texas Co.'s Bowerbank 4-23, 330 ft n 330 e w¼ cor 23-29-24, redrilled 4945 ft, perf, No est, shut-in, otd 12,144 ft, Stevens 10,776 ft, streaks fair oil sand 11,650-11,760 ft.

Ventura County: Rincon—Chanslor-Canfield, Midway Oil Co.'s Hobson C-3, 50 ft s 520 w n† cor 17-3-24, flow 70 bbls 29-gr, ⅛-in bean, pb 2836 ft, otd 10,515 ft.

WILDCAT STARTS

Kern County—Texas Co.'s Root 18-9, 9-29-24, grading roads, KCL 18-24, 24-29-24, lcn. Continental's Mabury 1, 25-26-18, lcn.

Michigan

Completions Continue Ahead of Starts

Completions continue ahead of starts with wildcat front still showing little sign of life. Reports of impending drastic production cut in March (from 47,000 to 34,000) freezing wildcat plans where promotional money is important for financing.

Wildcats: Shakespear Associate's City ot Cadillac 1, Section 35-23n-10w, Wexford County, logged Dundee lime 3739 ft (elev 1465 ft) and drilled to 3740 ft without shows. Hole will be reduced for Monroe lime penetration. Cores taken in Traverse 3103-31 ft, showed oil saturation.

Associated Petroleum and Southwest Development's Blacmer 1 wildcat, Section 15-8n-14w, possible pool opener, pumped 30 bbls after acid treating to Traverse lime at 1882 ft. It may be deepened.

COMPLETIONS

Allegan County: Hopkins—Andrew S. Hoyt's Knorr 1, sw sw sw 18-3n-12w, abnd 1616 ft.

Allegan County: Wildcat—Fisher-McCall's Salisbury 1, nw nw se 28-1n-12w, Traverse lime 1387 ft, abnd 1585 ft.

Arenac County: Adams—Ervin Major's Adams 1, ne ne ne 36-19n-3e, abnd 3002 ft.

Bay County: Kawkawlin—Chapman Oil Co.'s Reichsteiner 5, sw se ne 3-14n-4e, Dundee 2743-2900 ft, flow 300 bbls 22 hrs after acid, td 2920 ft.

Clinton County: Wildcat—J. B. Spitzley, tr.'s Simon 1, nw ne se 21-7n-4w, Traverse 2481 ft, abnd 2915 ft.

Gladwin County: Beaverton—Sun's Holycross B1, e½ sw se 17n-2d, Dundee 3800-70 ft, pump 49 bbls, 3888 ft.

Montcalm County: Home—Belvidere Oil Co.'s Van Houten 1, se se ne 30-12n-6w, Stray 1290-30 ft, 200,000 gas, 1303 ft.

Osceola County: Reed City—Ohio's Leusby n½ ne sw 20-18n-10w, Monroe 3350-56 ft, flow 310 bbls 1st hr, 3560 ft; Blanding 1, n½ nw se 29-18n-10w, drilled Monroe lime 3500-36 ft, flow 187 bbls 5 hrs, td 3536 ft; Howman 1, s½ nw sw 32-18n-10w, Monroe 3500-63 ft, flow 198 bbls 6 hrs, td 3563 ft; Vincent 2, n½ nw ne 6-17n-10w, Monroe 3566-3605 ft, flow 132 bbls following acid in 4 hrs, td 3600 ft.

Roscommon County: Headquarters—E. V. Hilliard's State A3, n½ nw se 33-21n-3w, Traverse 3439-42 ft, flow 91 bbls 1st hr, td 3492 ft.

Sanilac County: Wildcat—C. W. Teater's Cosgrove 1, w½ sw nw 14-14n-12e, Dundee 2608 ft, abnd 2686 ft.

Van Buren: Bangor—Circle Drilling Co.'s Bonamigo 1, sw ne se 2s-16w, Traverse 979 ft, abnd 1100 ft.

Van Buren County: Bloomingdale—John Burton's Stadler 1, sw sw se 1-1s-14w, Traverse 1271 ft, abnd 1282 ft.

WILDCAT STARTS

Livingstone County—Fischer-McCall's Hibner 1, c sw ne 4-3n-6e, rig.

Eastern States

NEW YORK

COMPLETIONS

Allegany County—Messer Oil Co., Vosburg farm, Bolivar, 15 bbls, Richburg, td 1388 ft. South Bolivar Oil Co., McKelvey farm, Bolivar, 5 bbls, Richburg, td 1360 ft. Angie Tullar 10, Mix farm, Bolivar, 5 bbls, Waugh-Porter, td 1456 ft. M. W. Reynolds, Holtum farm, Scio, 5 bbls, Richburg, td 1025 ft. Curt Oil Co., Williams farm, Bolivar, 5 bbls, Richburg, td 1362 ft. McEroe & Brown, Barnes farm, Alma, 5 bbls, Richburg, td 1234 ft. Marsh Oil Co., Fay farm, Bolivar, 9 bbls, Richburg, td 1430 ft. O. D. Underwood et al, McDivitt farm, Bolivar, 5 bbls, Richburg, td 1366 ft. L. H. Thornton et al, Smith farm, Willing, 6 bbls, Richburg, td 1274 ft. New York Oil Co., Brown farm, Bolivar, 6 bbls, Waugh-Porter, td 1389 ft. Sloan & Zook Green farm, Genesee, 5 bbls, Richburg, td 1367 ft.

INTAKE WELLS

Vosburg Oil Co., Green farm, Bolivar, Richburg, td 1361 ft. Messer Oil Co., Vosburg

Play Safe!

McKissick Tubing Catcher

McKissick Tubing Catchers will save valuable time and materials. You will cut down wear on couplings through the use of a McKissick Tubing Catcher and anchor by eliminating "breathing" of tubing.

Some of the improved features of McKissick Tubing Catchers are:

1. **They are Safe! Short in length—wide fluid courses—and with ample clearance of head and slips.**
2. **Rugged Construction. Slips are sufficiently large to distribute shock load over a greater area of casing surface.**
3. **Slip retaining ring acts as a fluid protector as well as a guide.**

McKissick Tubing Catchers are marked for specific weights of casing in which they are intended to be used. Through the use of the anchor attachment the tubing may be anchored at any point, simply by rotating the tubing from the top one-half turn to the left, and released by the reverse motion. Only one part, freely fitted, functions to set the anchor by means of the lifting sleeve which raises the slips to the head and in gripping contact to the casing, making a positive anchor.

Short Type for wells of average depth, Regular Type for deeper wells.

Write for Illustrated Bulletin

With Anchor

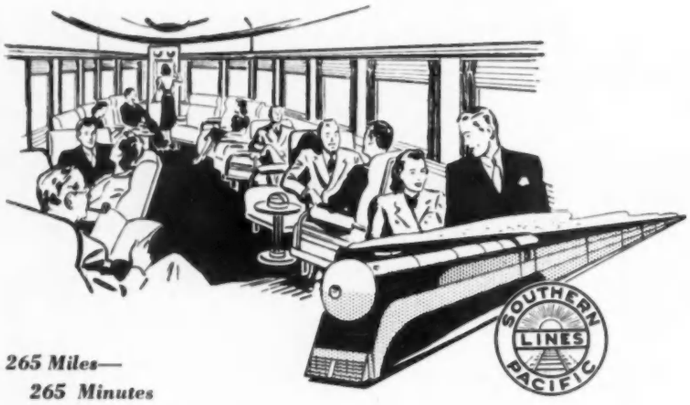
McKISSICK PRODUCTS CORP.

TULSA, OKLAHOMA

Next time, enjoy the EXTRAS of the SUPER STREAMLINER

EXTRA-LARGE CHAIRS

on the **Sunbeam**



265 Miles—
265 Minutes

Between HOUSTON and DALLAS

OTHER EXTRAS for more enjoyment: Full-size diner (delicious, popular-priced **Meals Select**). Extra-wide windows. The easy chairs may be turned to face windows. Extra-large dressing rooms. Extra-smooth speed. Extra room (**Sunbeam** is wider than standard trains). Air-Conditioned and radio equipped. After your first thrilling enjoyment of these extras, you'll always choose the **super** streamliner **Sunbeam!**

LEAVE HOUSTON 4:45 P. M.

Connections at Dallas for West Texas, Oklahoma, Arkansas, Colorado, Kansas City, St. Louis.

LEAVE DALLAS 5:00 P. M.

Direct connections at Houston with Sunset Limited for California—use Tourist Sleeper from Houston and save (berth rate less than standard Pullman). Also connections for New Orleans, East, Corpus Christi, Rio Grande Valley.

TWO OTHER DAILY TRAINS *Between* HOUSTON - DALLAS

Hustler—Morning Streamlined Service.

Owl—Fast overnight service. Double bedroom sleeping car (between Galveston—Houston—Dallas), standard sleepers, coaches. Through sleeper between Houston—Fort Worth.

Double Bedroom Sleeping Car on the famed **Sunset Limited** from New Orleans to California, via Beaumont, Houston, San Antonio, El Paso.

BUY DEFENSE BONDS AND STAMPS

Southern Pacific

J. F. Sullivan, Passenger Traffic Manager,
Southern Pacific Bldg., Houston, Texas

SHIP VIA SP — FREE PICK-UP AND DELIVERY SERVICE

farm, Bolivar, Richburg, td 1375 ft. South Bolivar Oil Co., McKelvey farm, Bolivar, Richburg, td 1356 ft. Producers Oil Corp. A, Keller-Scott farm, Wirt, Richburg, td 1060 ft. Ebenezer Oil Co., Vincent farm, Scio, Richburg, td 1070 ft. Bradley Prod. Corp., Rolls farm, Alma, Richburg, td 1350 ft. Otsquago Oil Corp., Pike farm, Alma, Richburg, td 1412 ft. Bradley Prod. Corp., Fitz-Carroll farm, Bolivar, Richburg, td 1410 ft. L. H. Thornton et al, Smith farm, Willing, Richburg, td 1079 ft. Bliven Hill Oil Co., McEwen-Norton farm, Amity, Scio, td 861 ft. McEwin-Norton farm, Amity, Scio, td 870 ft. H. W. Patterson et al, Ockerman farm, Amity, Scio, td 712 ft. McEbenwood Oil Co., McAndrews farm, Andover, Penny, td 1365 ft.

OHIO

COMPLETIONS

Ashland County—Glen Harmon, Anderson 1, 1.15 gas, 2818 ft.

Coshocton County—Preston Oil Co., Van Winkle 7, 13 bbls 3100 ft.

Guernsey County—James Ronshausen, Kelly 1, 0.04 gas, 1161 ft.

Knox County—East Ohio Gas, Snyder 2, 0.06 gas, 704 ft. Upham Gas, Lifer 1, 0.08 gas, 2736 ft. Knox Exploration Co., Fry 2, abnd 3107 ft.

Licking County—Natural Drlg. Co., Van Winkle 1, 0.03 gas, 2758 ft. Ohio Fuel, Boylan 1, 0.3 gas, 2555 ft. George Locknette et al, Shepard 1, abnd 2776 ft.

Medina County—R. C. Holmes et al, Hostettler 016, 5 bbls, 542 ft. Hostettler 018, 5 bbls, 530 ft.

Meigs County—Roush Bros., Cross 1, 0.07 gas, 3250 ft. Mathews Oil Co., Souders 1, 0.6 gas, 822 ft.

Monroe County—C. E. English, Scott 7, 3 bbls, 1536 ft.

Morgan County—Ohio Fuel, Mercer 1, 0.2 gas, 4239 ft. Bern Oil & Gas, Russell 1, abnd 1109 ft. Industrial Gas, Garrett 1, 0.55 gas, 4281 ft.

Muskingum County—Pure, Ribble 2, 0.74 gas, 4287 ft; Ribble 1, 0.74 gas, 4281 ft. Atha Co., Atha 7, abnd 3791 ft.

Perry County—Pure, Pargeon 1, 281 bbls, 3254 ft. C. B. Orndoff, Fleming 1, 0.16 gas, 406 ft. Industrial Gas Corp., Humberger 2, 220 bbls, 2806 ft.

Stark County—Belden et al, Barber 1, 1.6 gas, 4819 ft. Ohio Fuel, Hahn 1, abnd 4885 ft.

Summit County—Wm. Dempsey, Schumacher Schnabel 1, abnd 3243 ft.

Tuscarawas County—Nat. Gas Co., Sell 1, 0.55 gas, 4949 ft.

Washington County—Hope, Greenless 3, 0.12 gas, 1520 ft. Joe Hall, Hall 70, 1½ bbls, 460 ft. John Thornley et al, Hayes 3, abnd 722 ft.

Wayne County—Clark et al, Engle 1, 0.03 gas, 3050 ft.

INPUT WELLS

Medina County—R. C. Holmes et al, Oberton W1, 520 ft; Oberton W2, 516 ft.

PENNSYLVANIA

COMPLETIONS

Armstrong County—Hyde Park Foundry, Klingensmith 1, 0.02 gas, 1510 ft. Local Co., Umbaugh 1, 0.03 gas, 3192 ft.

Clarion County—United Natural, Eschlager 2, 0.03 gas, 2900 ft. Owens Illinois, Hetrick 1, 0.07 gas, 2688 ft.

Fayette County—Greensboro Gas Co., American Coke & Fuel Co. 1, 4.42 gas, 1377 ft.

Greene County—Pittsburgh Steel Co., Fee 2, 2.5 gas, 1550 ft.

Washington County—Union Gasoline & Oil Corp., Day 1, 0.35 gas, 2783 ft.

Westmoreland County—Peoples Natural Gas, Sparta 1, 0.12 gas, 3666 ft.

WEST VIRGINIA

COMPLETIONS

Boone County—Pond Fork, Fee 19, 0.97 gas, 2138 ft. South Penn, White 1, 0.20 gas, 1798 ft.

Cabell County—Cumberland Gas Co., Elwell 1, 0.09 gas, 3178 ft.

Calhoun County—Hope, Hardman 8568, abnd 2189 ft. A. E. Weaver & Z. N. Connelly, McCune 1, abnd 2039 ft. V. W. Hamilton et al, Cunningham 5, 15 bbls, 2220 ft. Creek Yoak & H. S. Brown, McDonald 2, 25 bbls, 1965 ft.

Clay County—Thompson Gas, Scott 54-T, 0.4 gas, 2137 ft.

Gilmer County—Chartiers Oil, Huffman 17, 0.4 gas, 2810 ft. W. H. & L. E. Mossor, Edwards 1, abnd 2340 ft.

Jackson County—G. L. Cabot, Aldeman 1, 16.0 gas, 5245 ft. Joe Rubin et al, Weekley 1, 7.8 gas, 4934 ft. Mullins Gas, Morehead 1, 1.14 gas, 5160 ft. United Carbon, Roush 1002, 5.4 gas, 4976 ft.

Kanawha County—Rex Oil & Gas Co., Harding 1, abnd 1459 ft. Columbian Carbon, Jones 1, 0.08 gas, 5396 ft. G. L. Cabot, Putnam 27, 0.66 gas, 5146 ft.

Mingo County—Breedon Oil & Gas, Stafford 2, 3 bbls, 1425 ft.

Ritchie County—Hope, Gorrell 8588, 0.03 gas, 2153 ft.

Upshur County—Cumberland & Allegheny Gas Co., Jones 311, 0.06 gas, 3878 ft.

Wetzel County—So. Penn Nat. Gas Co., Dewhurst, abnd 3103 ft.

Wirt County—Glen W. Roberts, McConaughey 1, abnd 1749 ft.

Men In The Industry's News

HARRY PHILLIP STOLZ of Los Angeles who recently was elected chairman of the petroleum division of the American Institute of Mining and Metallurgical Engineers at convention in New York. He graduated from Stanford with an AB degree in June, 1921, in geology. "Hard Rock" mining in Navada and California was his occupation until the spring of 1923. In that year he married Gertrude M. Peters, also a Stanford graduate. They now live in La Canada, California, and have two sons and one daughter.

Since 1923 Mr. Stolz has been associated with the California oil industry and 11 years ago entered into partnership with E. R. Stanley under the firm name of Stanley and Stolz, consulting engineers and geologists.

Included in his academic work during this period, Stolz has been on the petroleum engineering faculty of University College, USC, and holds M.S. and engineering degrees in petroleum engineering from USC. He is a member of Theta Xi social fraternity, and of Sigma Xi.

He has been active in the work of the American Institute of Mining and Metallurgical Engineers. In 1939 he was elected chairman of the Southern California Chapter, and last year served as vice chairman of the Petroleum Division.

In June, 1941, he was called to active duty as Lieutenant Commander in the U. S. Navy and assigned to the office of Inspector of Naval Petroleum Reserves in California as assistant inspector.

W. L. JAMES of Tulsa, for 11 years purchasing agent of Stanolind Gas & Oil Company prior to joining the Office of Production Management last September, has been appointed assistant director of purchases of the War Production Board, in charge of commodity procurement specialists. He will head a staff of commodity specialists who will advise the various government agencies in the procurement of materials and products.

B. H. ROBINSON of General Petroleum Corporation is chairman of the Pacific Coast District of the American Petroleum Institute's Division of Production which will hold its spring meeting March 10 in Los Angeles. Robinson attended University of New Mexico and United States Naval Academy. He started work in the Oklahoma oil fields in 1923 as tank painter. He has been with General Petroleum Corporation for the past 16 years. Currently, he is superintendent of drilling and producing operations in the Los Angeles Basin.

BARTON P. SIBOLE has been elected president of the Stanolind Pipe Line Company, Tulsa. He formerly was executive vice president and active executive head. He succeeds A. W. Peake who becomes chairman of the board of directors, a post he held before the retirement in 1940 of Robert S. Ellison as president. Sibole has been active in the company's operations for some time. At the same time, the duties of vice president William G. Heltzel have been enlarged.

W. A. GOFORTH has been reelected president of Valley Osage Oil Company, Tulsa. N. T. and A. T. Gilbert were elected vice presidents and C. A. Solt secretary-treasurer.

L. D. SMITHERS, Tulsa, has been transferred from the Mid-Continent office of Dowell Incorporated to Freeport, Texas, where he will be associated with The Dow Chemical Company.

J. R. LEWALLEN, Tulsa, has resigned as traffic manager of the Mid-Continent division of Tide Water Associated Oil Company to go with Anderson-Pritchard Oil Corporation and Colten Refining Company, Oklahoma City.

ANTUN E. CUTHRELL, chief petroleum engineer, Standard Oil Company of Argentina, presented a paper on "Operating Problems in Argentina" before the Houston Geological Society February 19.

M. T. HALBOUTY, consulting geologist and petroleum engineer, Houston, left last week for Fort Benning, Georgia, to take up Army duty as a captain. Halbouty is former chairman of the Gulf Coast Chapter of the American Institute of Mining and Metallurgical Engineers. He graduated from Texas A. & M. College in 1930 with a B.S. degree, and in 1931 he received a master's degree in advanced geology and advanced petroleum engineering.

G. A. MABRY, who has been with Humble Oil & Refining Company, Houston, for 18 years, left last week to assume a commission as a first lieutenant in the United States Army. He has been assigned to the Quartermaster Replacement Training Center, Fort Francis E. Warren, Cheyenne, Wyoming. He has held a commission for seven years.

Mabry was appointed in March, 1941, to assist President H. C. Wiess in handling newspaper and press contacts. He has been in charge of the company's publications for several years. He joined the company in 1924 as a member of

The greatest air force ever assembled would be totally useless without oil. For this, and other reasons, America's pipelines are its lifelines of defense.

Aiding the delivery of today's peak loads is a large army of Ludlow Valves—many of them installed years ago. Operating on the famous double-disc, parallel seat principle, developed and perfected by Ludlow, these rugged valves work smoothly, close securely—whether in action every few minutes or only in emergencies. In peace or war, *Ludlow means value in valves.* Write for Catalog.

THE LUDLOW VALVE MFG. CO., INC.
Troy, New York

Construction Features: **Self-releasing 30° angle wedges and free-floating gates, self-adjusting to seats, afford smooth, trouble-free performance, long service. Rings are cleaned throughout stroke action. Gates are wedge-locked directly opposite ports and completely unwedged before raising. Ample tolerances provide easy action. Simple construction permits easy replacement of parts.**

LUDLOW VALVES

SINCE 1866

Standco
NO-SMOKE
STANDCO BRAKE LINING
Is the driller's best friend because it makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See Page 2257 Composite Catalog.
Standco Brake Lining Co.
HOUSTON

Tobin Brothers
Accountants and Federal Tax Counselors
SPECIALISTS IN OIL ACCOUNTING AND INCOME TAX
540 First National Bank Building
Houston, Texas

BANKRUPT SALE
At the office of the Referee in Bankruptcy, Room 372 Federal Building, Dallas, Texas, at 11:00 o'clock on Wednesday, February 25, 1942, will be sold at public auction producing oil and gas leases including equipment in Winkler, Ward, Houston, Howard, Marion and Gregg Counties, Texas, and Lea County, New Mexico; two producing oil and gas payments in Winkler County, Texas, and Lea County, New Mexico. Office furniture and equipment and various non-producing leases and royalties in Illinois, Louisiana, Arkansas and Texas.
Signed: Lewis W. MacNaughton, Trustee in Bankruptcy of the Illinois Oil Company, Bankrupt, 1000 Continental Bldg., Dallas, Texas. Telephone R-1667. Full details on file with Referee in Bankruptcy in Dallas; also at office of the Illinois Oil Company, 1514 Santa Fe Building, Dallas, Texas.

William M. Barret, Inc.
Consulting Geophysicists
Specializing in Magnetic Surveys
Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.
GIDDENS-LANE BUILDING
SHREVEPORT, LOUISIANA

THE FORT WORTH LABORATORIES
Analysis of oil field brines, cores, gas, oil and minerals. Field gas testing. R. H. Fash, Vice President; Long Distance 138. 823½ Monroe Street, Fort Worth, Texas.

HOUSTON LABORATORIES
Analytical and Consulting Chemist
Podbielniak Gas Analysis
Oil Field Brines, Waters and Cores
Complete Evaluation of Crude Oils
Long Distance 267, Box 132, Houston, Tex.

Over 300 Illinois operators heard Wirt Franklin, OPC director of production for District No. 2, urge adoption of a state conservation measure at a meeting sponsored by the Independent Oil Producers Association of Illinois, held at Mt. Vernon on February 12. The above group at the speakers table show, left to right: C. K. Schwartz, Franklin, Harold S. Williams, Clarence T. Smith, G. C. Curtis, Barron Kidd, Ray Moore, G. H. Blankenship, and Lawrence E. Smith.

the pipe fitters gang. Later, he was transferred to the safety and personnel department. He was promoted to Houston headquarters in 1930 where he took over a program of training for the sales department. In this work he started a publication for the sales force, and shortly afterward this was converted into the present monthly publication, "Humble Sales Lubricator." Mabry is former president of the Houston Rotary Club.

N. R. CRAWFORD, vice president and general manager of Dowell Incorporated is temporarily located in Freeport, Texas, assisting The Dow Chemical Company in work of enlarging the magnesium plant.

STANLEY B. WHITE, Mid-Continent geologist for Ohio Oil Company, is being transferred to the main office at Findlay.

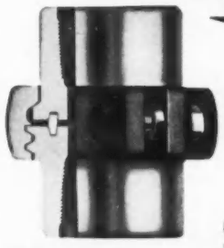
O. E. DUSTMAN, Southern California manager of Ralph N. Brodie Company, with offices in Los Angeles, died February 3, in Los Angeles.

BEN H. RAVANELL, since 1933 with Oil Well Supply Company where he progressed through the positions of service, design, sales and development engineer has resigned and accepted a mechanical engineering position with Guiberson Diesel Engine Company of Dallas, with which he was formerly connected for three years. Guiberson Diesel Engine Company will occupy its new $2,500,000 plant at Garland next month and continue production of Diesel tank engine.

VICTOR E. EKHOLM, Dallas consulting geologist and a resident of Arlington, Texas, has departed for La Paz, Bolivia, where he will become chief geologist and general manager of the Bolivian government's oil operations. He is a native of Illinois, and studied geology at University of Illinois. He was with the Gulf Oil Corporation in Venezuela for eight years, returning to the United States in 1925.

SAM G. HODGES, 51, West Central Texas drilling contractor and operator, died February 16 at his Abilene residence, having been ill several months.

MAURICE TEIS has joined the geological staff of Ohio Oil Company at Tulsa.

NO GASKETS
EVERY Red-Rex UNION HAS A RENEWABLE

BRONZE OR STEEL SEAL RING
OIL CITY BRASS WORKS
FOUNDERS · MANUFACTURERS · MACHINISTS
Beaumont, Texas, U.S.A.

Squeaks from the Bull Wheel

Hick Stuff

"Hello, Nick. How's your pa?"

"Pa's been sick off and on but not enough to brag about."

"Is your ma still beatin' him up?"

"I want you to understand that pa is king in our household."

"Yep, I know that—I was there the day your ma crowned him. How are the crows behavin' in your cornfield?"

"My brother made a big scarecrow. It was so natural it frightened all the crows away."

"That ain't nothin'. We got a scarecrow that scared 'em so hard they fetched all the corn back!"

Ignorance Showing, Too

"Pardon me, young lady, in the matter of your dress, don't you think you could show a little more discretion?"

"My gosh, some of you fellows aren't ever satisfied."

Business Man

"I owns a hand laundry."

"Where is it located?"

"Dar she comes now!"

Quick Departure

Pat, employed in a local quarry, one day set off a stick of dynamite by accident and forthwith disappeared into the clouds with several tons of debris. The catastrophe was witnessed by Mike, who, some time later, was approached by the quarry owner.

"Where's Pat?"

"Gone."

"And when will he be back?"

"Well, if he comes back as fast as he went, bedad, he'll be back yesterday!"

Reward

Some years ago, the Secretary of State asked one of his clerks if he could speak Spanish. The young man replied that he could not; but, visioning an appointment as Secretary of the Legation at Madrid, he went away and studiously applied himself to the study of that language.

Three months later, he went to the Secretary of State and proudly announced that he had mastered the Spanish tongue.

"Excellent," exclaimed the Secretary. "You have a wonderful treat in store for yourself."

"What is that, sir?" the clerk eagerly inquired.

"Now you can read Don Quixote in the original."

On the Rocks

"I haven't seen my Uncle Pat for 10 years. Tell me what he's been doing all that time."

"Ten years."

Mistaken Identity

"It was very plucky of you, madam, to have set upon the burglar and capture him, but need you have blackened his eyes and knocked all his front teeth out?"

"Well, how was I to know it was a burglar? I'd been up three hours waiting for my husband."

Tact

"You seem to be an able bodied man. You ought to be strong enough to work."

"I know, mum, and you seem beautiful enough to go on the stage, but evidently you prefer the simple life."

"Step into the kitchen and I'll see if I can stir up a meal for you."

Why Differentiate?

"You don't seem to realize which side your bread is buttered on."

"What difference does it make — I eat both sides."

Cluck, Cluck

"What's Chuck doing?"

"Oh, just dame-dreaming."

Bad Case

"There are three things I'm always forgetting. I can't remember faces, I can't remember names, and—and—"

"What's the third thing?"

"I can't remember."

EVERYONE IN CHARGE OF OIL FIELD OPERATIONS NEEDS A COPY OF

ORDERS M-68 and P-98

These two priority orders cover all types of equipment and material used by the oil industry. In addition, THE OIL WEEKLY has compiled a Simplified Outline of Procedure for Obtaining Various Types of Equipment and Material for Production and Pipe Line Operations in accordance with these orders.

Copies of the two official orders, M-68 and P-98, together with the outline of procedure for obtaining equipment have been incorporated into a convenient 12-page booklet (8½" x 11") available at the following prices, postpaid:

Quantity	Price	Quantity	Price
1 to 24 copies, each	$0.50	50 to 99 copies, each	$0.35
25 to 49 copies, each	.45	100 to 200 copies, each	.25

(PRICES OF LARGER QUANTITIES UPON APPLICATION)

Address THE OIL WEEKLY, Form Dept., 3301 Buffalo Drive, Houston, Texas

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WATER CANS & COOLERS
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
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WATER COOLER
GOTKOOL WATER COOLER
Made in 2, 3, 5, 8, 10, 15 and 20 gallon sizes.
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
GOTKOOL WATER CAN
KEEP PURE DRINKING WATER ALWAYS HANDY

Notes for the Equipment Buyer and User

Well Heads

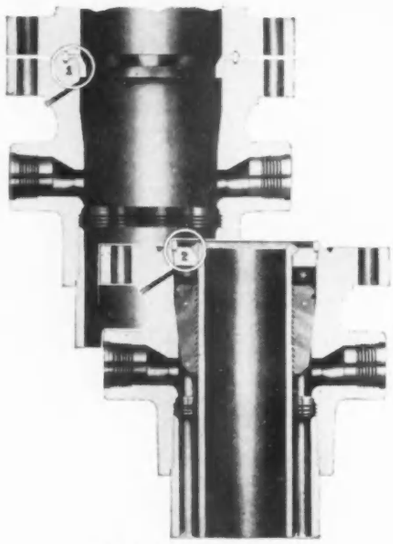
RECTOR WELL EQUIPMENT COMPANY

Rector Well Equipment Company, Fort Worth, Texas, has announced addition of the RHX "Rectorhead," for installation with higher pressure units, to its line of well head equipment.

The RHX "Rectorhead" is a modification of the Type RH Slip Suspension Rectorhead, to permit the use of higher pressure tubing head, flanged directly to a lower pressure casing head which, although deviating from API standards, is recognized as an "economic expedient" by many operators. For example, the manufacturer states, a 6000-pound-test casing head, with 900 series flange, may be set and used during operations, with blowout preventer flanged directly onto it.

After oil string is set, a 10,000-pound-test tubing head, with 900 series flange on bottom end, may be flanged directly to the casing head, using the restricted ring groove. The use of the restricted ring groove, by exposing less area to pressure than the standard ring groove for that particular flange size and series, permits the tubing head to be tested and used at the next higher pressure rating.

During drilling operations, the blowout preventer is flanged to the casing head, using standard ring groove. At this time the protector ring is in place to guard the inner ring groove from damage by bit or kelly. This ring has the same bore as the pipe, and the lip between the flanges does not interfere with the outer API seal ring. After pipe is set, the blowout preventer is raised, slip set, and welding ring applied and welded. If a weld test is desired, a double welding ring, with space between, is used so that pressure may be applied through the port in the side of the head directly against welds.



R H X "Rectorhead"

By flanging the casing head and tubing head together direct, the use of intermediate flanges, 2 long bolts and 2 seal rings, instead of 1, is eliminated with consequent conservation of material and reduction in cost of equipment left on the well. With this construction, the welding ring sets down on a solid seat in the body of the head; consequently, no strain can be thrown on the weld as bolt pressure is applied.

Heavy-Duty Valve

HUNT TOOL COMPANY

Hunt Tool Company, Houston, has announced the addition of the Hunt All-Steel Heavy-Duty High-Pressure Valve to its series of line valves.

This new series of line valves is of simple design, and features a reversible disc and seat of stainless steel. The seat is held in place by two standard API rings. These rings, being of lower Brinnell hardness than the disc, take the wear, assuring positive seal as the seat and disc wear. The same disc and seat will fit any of the various valves of the same size, whether screwed or flanged.

The valve is manufactured in both the 2- and 4-inch range, 4000- and 6000-pound test, screwed or flanged. Due to the compact design of this type valve, it eliminates unnecessary connections and reduces space requirements to a minimum.

Construction is such, the manufacturer states, that it is unnecessary to remove the valve from the line to reverse or renew the disc or valve. It is only necessary to remove the eight flange bolts, and raise the bonnet sufficiently to clear the seat. In addition to this feature, the manufacturer says, the valves can be repacked under pressure, as bonnet top has a machined recess which seals the valve around the stem when it is in full open position.

Hunt Steel Valve

These valves are manufactured according to the ASME Code.

Axelson Completes Fifty Years Service

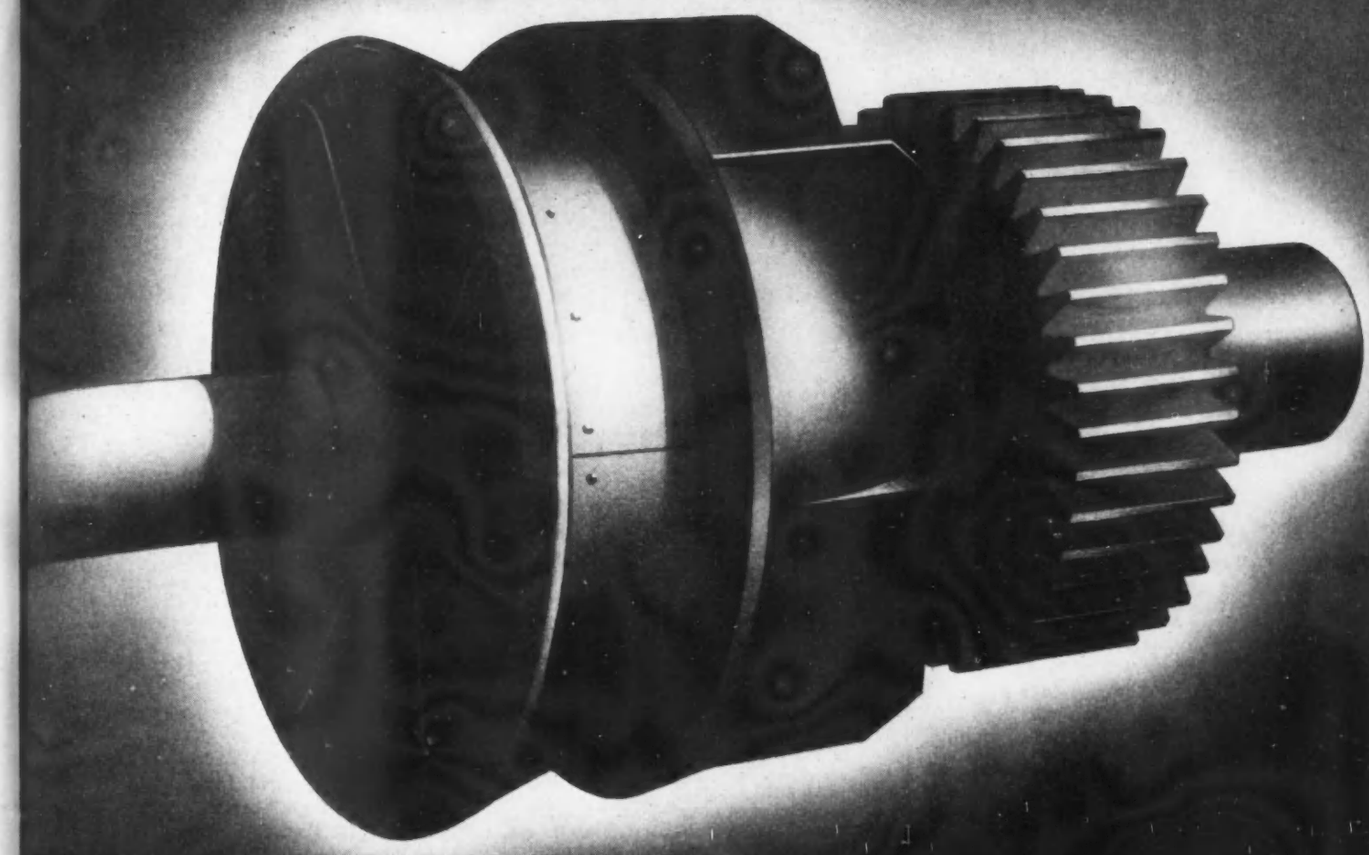
During February, Axelson Manufacturing Company of Los Angeles terminates 50 years of operation. This half-century span is marked by rise of the organization from an original investment of $1200 to a world-wide concern whose widespread operations are aptly described by the slogan: "The sun never sets on Axelson pumps and sucker rods." The company is now experiencing its second major war, and, as in the past world war, is taking an active part,

No Pressure Gauge Blackout Here!

Why? Because you're looking at a dial that's not jittery . . . that carries billboard figures and large, distinct divisions through a colorless, unbreakable plexiglass face. The face will not frost because the gauge operates in oil and is unaffected by temperature extremes. It's small wonder the **easily-read** Abercrombie Pressure Gauge is the choice among field men everywhere.

FLUID-PISTON HIGH PUMPS
ABERCROMBIE PUMP CO.
GULG BLDG. HOUSTON, TEXAS

Molybdenum Steels meet exacting service requirements without increasing costs



A considerable saving has been brought about by making the vital cone clutch in a draw works assembly of cast Manganese-Molybdenum steel.

This steel, containing 1.20%-1.50% Mn and 0.30%-0.40% Mo, develops ample strength and hardness when double normalized and tempered at 1200° F. Without sacrifice of serviceability, costs have been reduced by adopting this steel, noted for its excellent physical property-cost ratio.

You will find the complete data on Molybdenum steels in our technical book, "Molybdenum in Steel", helpful. A copy will be sent free on request.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.
MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • CALCIUM MOLYBDATE

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with a forged steel UNIBOLT Coupling and blanking plug—you'll speed up the taking of bottom hole pressures, running paraffin scrapers, bottom hole chokes, etc.

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UNIBOLT

THE ONE BOLT COUPLING

BOWEN SOLID LINE WIPER

SAFETY - ECONOMY - UTILITY

DEPENDABILITY

CONVENIENCE

This Line Wiper, as illustrated, is available with or without the remotely controlled Packing Nut Tightener. It is the most versatile line wiping and oil saving device of its kind.

The size with 3" bottom connection will allow tools 1¾" OD to pass through it.

Descriptive literature with complete instructions is packed with every tool.

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Technical organization located in southwest wishes to employ a chief draftsman and a number of senior draftsmen familiar with general petroleum and chemical plant design. Give complete details of personal qualifications, technical training, experience, references, and salary desired. Include a recent photograph. Address: Box 222, c/o The Oil Weekly, Houston, Texas.

producing a large volume of aviation parts for Allied warplanes.

Two industrious brothers in Santa Ana, California, C. F. and G. A. Axelson, cherished dreams during their boyhood days which culminated in their establishment of a small machine shop in 1892, then known as Acme Iron Works, and later developing into the company which now bears the name of its founders. During early years a wide variety of products were made, but the Axelsons were never swayed from their early interest in oil well pumps; and before the turn of the century, petroleum engineers were talking about the Parker pump, the Axelson-produced product that represented the first use of the metal-to-metal principle. This pump was so accurate in all parts as to permit interchanging plungers, liners, cages, etc., from one pump to another, and the company developed additional production refinements as a result of considerable laboratory testing.

Within a few years, the plant developed the "Parker-Improved" sucker rod, which marked the beginning of a succession of sucker-rod improvements by Axelson's research staff, the plant reaching finally its present capacity of producing more than 2,000,000 feet of sucker rods monthly.

With addition of diversified equipment, Axelson service became more universal, with first supply outlets established to serve the important fields of the West. After a period of rapid growth, scope of operation of the company expanded to include not only all oil fields of the United States, but also those of the principal oil-producing foreign countries, with representation in the Mid-Continent and Eastern areas by Frick-Reid Supply Company and Great Northern Tool & Supply Company.

Later, two important manufacturing items were added to the Axelson products, including the Axelson lathe, regarded today as an important contribution of the company's product lineup, and precision gauges.

Present management of the company includes the two sons of the founders, J. C. Axelson, president and general manager, and D. F. Axelson, vice president. Of the future of the company, J. C. Axelson says: "As we enter our second half century of operation, we are answering the nation's challenge with maximum production without sacrifice of precision and quality standards. We see one obligation above all others: Wherever pumps are lifting oil for America's victory, we'll help 'keep 'em pumping!' "

Earth-Moving Machines

LaPlant-Choate Manufacturing Company, Cedar Rapids, Iowa, has released a new booklet describing earthmoving, land clearing and removal equipment. Each model is described generally, with explanations as to size and capacity. The fact that all equipment is built exclusively for use with "Caterpillar" tractors is emphasized, as is their world-wide sales and service organization.

Sections are devoted to cable-operated scrapers, ranging in size from 12 to 33 cubic yards; to hydraulically operated scrapers of 3.8 to 8.2 yards, and the new CW-10 "Carrimor" 10-cubic yard scraper. Trailbuilders, bulldozers, tampers, rippers and other tools are also included.

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* Indicates that detailed information on the manufacturer's products or services may be found in the 1942 edition of The Composite Catalog of Oil Field & Pipe Line Equipment.